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C O L L E G E O F A G R I C U L T U R E

U n i v e r s i t y o f M a s s a c h u s e t t s

ANNUAL REPORT

For Period: July 1, 1967 through June 30, 1968

Submitted to: President John W. Lederle

Submitted by: A. A. Spielman

A. A. Spielman

Dean, College of Agriculture

August 1, 1968

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COLLEGE OF AGRICULTURE

APPROPRIATIONS

			Extension Service		Experiment Station		
Year	Instruction	Control	State	OTHER	State	OTHER	TOTALS
1965-66	$1,068,778.00	$452,647.00	$623,261.00	$599,245.00	$1,072,492.00	$690,870.00	$4,507,293.00
1966-67	1,566,078.00	371,460.00	562,909.00	697,286.00	1,007,805.00	725,441.00	4,930,979.00
1967-68	1,802,816.00	379,775.00	597,729.00	697,286.00	919,421.00	725,441.00	5,122,468.00

COLLEGE OF AGRICULTURE

PERSONNEL - NUMBER IN EACH RANK

Academic Personnel	September 1965	September 1966	September 1967
Dean	1	1	1
Associate Dean and Director of Stockbridge School	1	1	1
Associate Director of Extension	1	1	1
Commonwealth Head of Department	1	1	1
Head of Department "A"	7	8	9
Head of Department, academic year	1	1	1
Commonwealth Professor "A"	1	0	0
Commonwealth Professor, academic year	1	1	1
Professor "A"	45	42	41
Professor, academic year	7	6	6
Associate Professor "A"	38	39	38
Associate Professor, academic year	5	5	7
Assistant Professor "A"	40	37	29
Assistant Professor, academic year	16	16	14
Assistant Professor, academic year, ½ time	0	0	0
Instructor "A"	13	13	13
Instructor "A", ½ time	0	0	0
Instructor, academic year	1	2	3
Instructor, academic year, ½ time	2	2	1
Visiting Lecturer	2	1	3
Lecturer	0	1	2
Lecturer, ½ time	1	1	2
Sabbatical Leave	3	5	7
Leave Without Pay	1	2	3
TOTAL (does not include vacancies)	188	186	184

Non-academic Personnel			
Assistant to Dean	1	0	0
Assistant Director of Experiment Station-Extension Service	0	1	1
Staff Associate	2	1	1
Staff Assistant	2	3	3
TOTAL	5	5	5

COLLEGE OF AGRICULTURE

ORGANIZATION CHART

Department	Resident Instruction			Non-Resident Instruction	Experiment Station	Control Services
	Assoc. Degree	B. S. Degree	Grad.	(Cooperative Extension)		
Agricultural and Food Economics	X	X	X	X	X	
Agricultural Engineering		X	X	X	X	
Cranberry Station				X	X	
Entomology		X	X	X	X	X
Environmental Sciences				X	X	X
Feed-Fertilizer-Seed and Dairy Law					X	X
Food Science and Technology	X	X	X	X	X	
Forestry and Wildlife Management	X	X	X	X	X	
4-H and Youth Programs				X		
Home Economics Extension *				X		
Landscape Architecture	X	X	X		X	
Plant Pathology		X	X	X	X	X
Plant and Soil Sciences	X	X	X	X	X	
Veterinary and Animal Sciences	X	X	X	X	X	X

* In School of Home Economics

RHB:mo 5/16/68

ACCOMPLISHMENTS AND HIGHLIGHTS

RESIDENT INSTRUCTION

Student quality and quantity continues to increase as typified by majors in the Department of Veterinary and Animal Sciences. During the fall semester the following percentages of animal science majors, by class, had a 3.0 average or better:

> Senior, 50%; junior, 25% with Linda Doggart attaining a perfect 4.0; sophomore, 28%; freshmen, a remarkable 33%.

Spring semester four-year enrollment in the department increased 60% over 1967, while Stockbridge enrollment increased 61%.

The Department of Entomology has increased enrollments in all levels of classwork totaling over 1,100 students. Graduate majors now total 24; up five from the previous year.

New courses and programs approved during the year will add breadth and quality at both the undergraduate and graduate levels. Included are courses in Plant Virology, Economic Entomology and Principles of Fishery Biology.

Graduate programs include plant-water relationships, an interdepartmental program in International Agricultural Studies, and Microbiology of Marine Environment. A Master of Regional Planning program in the Department of Landscape Architecture includes instruction staff from the School of Business Administration, Department of Recreation, Water Resources Center; and the Departments of Forestry and Wildlife Management and Agricultural and Food Economics from the College.

The graduate curriculum of the Department of Agricultural and Food Economics has been coordinated with those of the Economics Department in the College of Arts and Sciences. A program with the same general requirements in both departments has resulted.

A cooperative college-school science institute in Greenhouse Management for junior and senior high school biology teachers is being conducted by the Department of Plant and Soil Sciences June 24 to August 2. A $29,000 NSF grant provides for 25 participants with full stipends and two students with partial stipends.

An Honors Colloquium on Metabolic Control conducted by the Department of Plant and Soil Sciences has filled a need in educational excellence, based on student participation and enthusiasm. Several of the participants (juniors) have preregistered for a graduate level course in this area this fall as part of the Advanced Plant Physiology Program being developed in cooperation with the Botany Department. Undergraduates in the Honors Colloquium were drawn from chemistry, biochemistry, zoology and plant and soil sciences majors.

Numerous colloquia open to the scientific public were presented during the year by departments within the College. The Department of Entomology presented a series of biological colloquia with speakers made available by the Daniel J. Klein Lectureship Fund. The speakers, all prominent biologists, represented Tufts University, U.S. Army Pioneering Research Laboratory, Princeton University, Cornell University and the U.S. Department of Agriculture.

Liason was established with the City of Holyoke by the Department of Landscape Architecture for the purposes of graduate education and to work with the city on problems of master planning, slum housing renewal and other environmental design problems. John Martin, the initiator, also was responsible for a similar relationship with the Northampton Chamber of Commerce.

A Restaurant and Hotel Management course in Food Service Management was offered off-campus three times during the year for credit toward the associate degree. Classes were held at Waltham, Amherst and Plymouth. A total of 105 students completed the course.

The Massachusetts Student Section of the American Farm Economics Association has been reactivated and officers elected for the coming year. A large number of students have expressed interest in participating in the national public speaking and debate activities of the American Agricultural Economics Association.

A Summary of Resident Instruction, plus tables on Graduate Students and Post-Doctoral Fellows, Applications for Entrance and long-term Student Enrollments will be found in the Appendix.

COLLEGE OF AGRICULTURE

NUMBER OF MAJORS ENROLLED

(GRADUATE, UNDERGRADUATE, STOCKBRIDGE)

Department	1961	1962	1963	1964	1965	1966	1967
Agricultural and Food Economics	66	64	67	53	77	90	105
Agricultural Engineering	19	18	17	20	21	21	18
Entomology and Plant Pathology	26	28	26	33	34	34	47
Food Science and Technology	138	161	171	195	243	255	316
Forestry and Wildlife Management	175	179	185	212	260	345	359
Landscape Architecture	140	173	179	216	253	277	302
Plant and Soil Sciences	122	135	139	167	186	190	186
Veterinary and Animal Sciences	145	148	144	152	160	171	214
Totals	831	906	928	1,048	1,234	1,383	1,547

COLLEGE OF AGRICULTURE

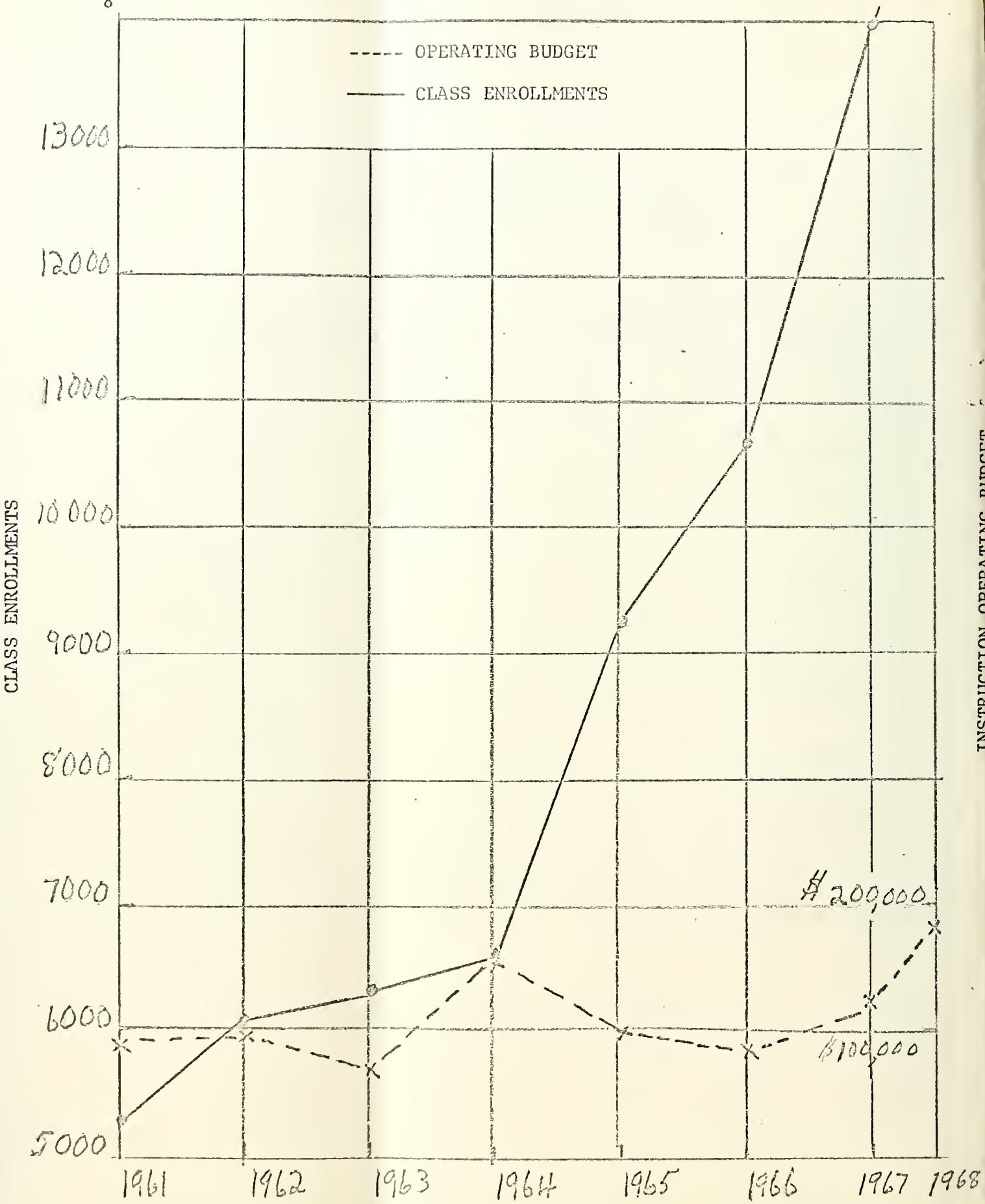
TOTAL CLASS ENROLLMENTS

(GRADUATE, UNDERGRADUATE, STOCKBRIDGE)

Department	1960-61	1963-64	1965-66	1967-68
Agriculture and Food Economics	486	768	1,415	1,426
Agricultural Engineering	478	603	1,729	775
Entomology and Plant Pathology	442	905	1,189	1,410
Food Science and Technology	479	669	1,677	2,388
Forestry and Wildlife Management	648	550	957	1,281
Landscape Architecture	894	1,152	1,748	2,284
Plant and Soil Sciences	1,232	1,233	2,096	2,428
Veterinary and Animal Sciences	660	731	878	1,621
Totals	5,319	6,611	11,689	13,613

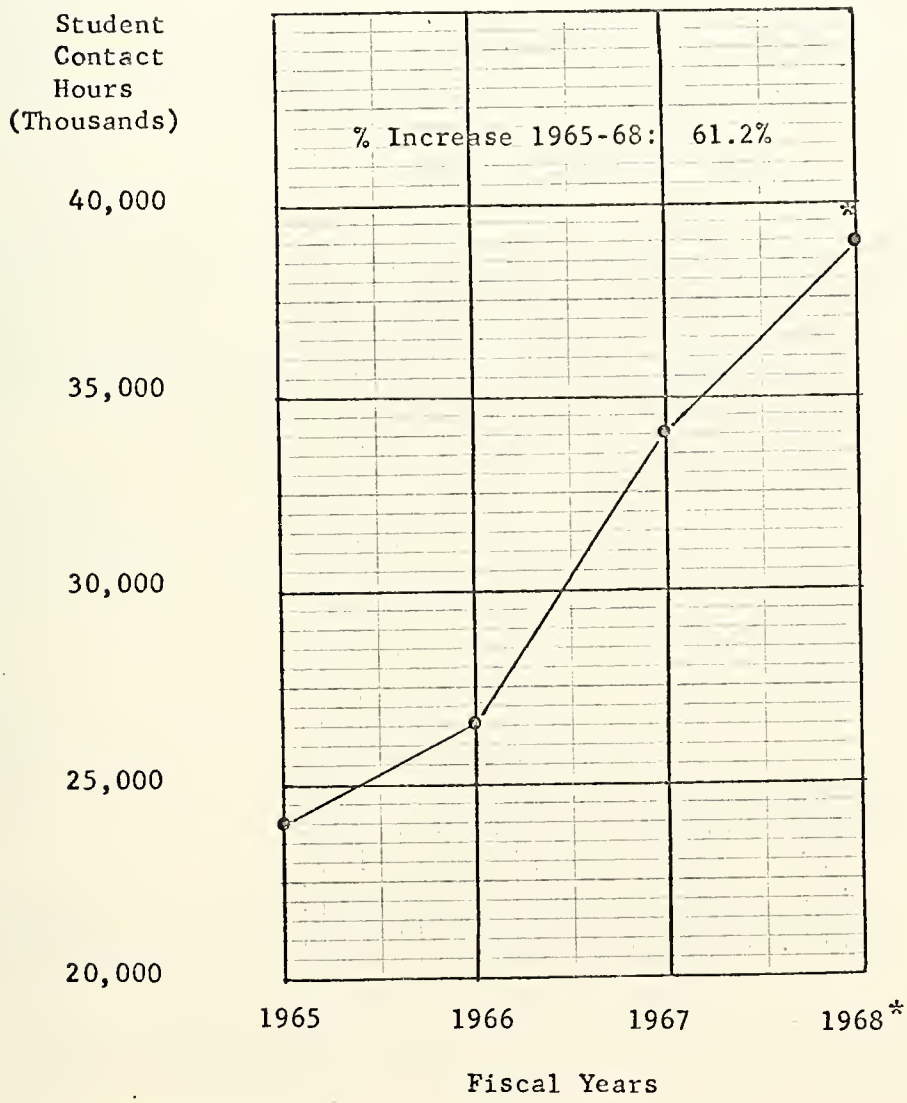
Percent Increase 1960-61 to 1967-68: 155%

COLLEGE OF AGRICULTURE



College of Agriculture

TOTAL STUDENT CONTACT HOURS



* Estimate

COLLEGE OF AGRICULTURE

NUMBER OF DEGREES GRANTED

Degrees	Sept. 1966 to June 1967	Sept. 1967 to June 1968
Bachelor of Science	103	148
Master of Science	56	63
Doctor of Philosophy	17	9
Stockbridge School	213	224
Totals	389	444

Undergraduate

Magna Cum Laude: David A. Caporello, Forestry and Wildlife Management

Cum Laude: Ernest W. Kelley, Plant and Soil Sciences
Walter E. Rogers, Landscape Architecture
Frederic F. Sibley, Landscape Architecture
Donald S. Weagle, Agricultural and Food Economics
James Chase, Agricultural and Food Economics

American Society of Animal Science Scholarship Awards:
(Students must rank among top 10% of their class)

David Almstrom
Alan King
Lee Sanford

Stockbridge School

With Honors: Lyn S. Ball, Wood Utilization
Ingrid J. Berg, Animal Science
Wilma H. Hunt, Animal Science
Brian J. Parker, Fruit and Vegetable Crops
John R. Parquette, Jr., Arboriculture and Park Management
Paul H. Wagner, Animal Science

Lear Honorary Scholastic Society: Thirty-two graduates, including 10 in the Department of Veterinary and Animal Sciences, elected members. Students must have a 3.4 or higher cumulative average.

Continued Studies: For the fourth consecutive year, more than one-third (37%) of graduates will continue study for their B. S. degrees here and away.

COLLEGE OF AGRICULTURE

OUTSTANDING ACCOMPLISHMENTS OF, OR RECOGNITION OF STUDENT MAJORS

Rodney Croteau,

graduate student in food science and technology, awarded $3400 National Aeronautics and Space Administration traineeship (Sept. 1968) designed to assist superior students doing graduate work in space-related areas. Also recipient for second year of Institute of Food Technology (I.F.T.) fellowship of $1,000.

Thomas Bibeau,

food science and technology, '71, awarded I.F.T. sophomore scholarship in national competition.

David H. Almstrom,

animal science, '68, whose senior honors thesis "The Effects of Levels of Acidity on the Absorption of Volatile Fatty Acids from the Rumen Pouch of Sheep" will be presented at the Eastern sectional meeting of Animal Science. His thesis will be published. Received Ralston Purina Summer Scholarship Intern Award. Elected to Sigma Xi. Accepted for graduate work at Cornell University.

Linda Doggart,

animal science, '69, New York Farmers Award for highest academic average in the junior class, College of Agriculture (second year).

Ingrid Berg,

animal science, Stockbridge School, '68, New York Farmers Award for highest academic average in the senior class (second year).

David Caporello,

forestry and wildlife management, graduated Magna Cum Laude, elected Xi Sigma Pi, recipient New York Farmers Scholarship.

David Clarke,

wood technology, '68, introduced and developed a successful crew while an undergraduate. As their coach and prime mover had crew accepted as a recognized sport.

Yehoshua Tidhar,

agricultural and food economics, '68, won honorable mention in national essay contest conducted by American Agricultural Economics Association, August, 1967.

Jamie Angus,

agricultural and food economics, '68, awarded research assistantship to continue work for Ph. D. degree at University of Minnesota.

Richard Bir,

plant and soil sciences, '68, received fourth place award in the undergraduate research competition, American Society for Horticultural Science for presentation of his paper "Alar and CCC as Preservatives for Cut Roses" at AIBS meetings, Texas A. & M., August, 1967.

Victor Gapud,

entomology, '68, received University of Massachusetts Graduate Fellowship.

Joseph Kijak, Richard Nadelson, John Rodiek,

graduate students in landscape architecture, received grants from America the Beautiful Fund to assist city of New Bedford in revitalization of its park department.

Walter Rodgers,

landscape architecture, '68, received American Society of Landscape Architects Certificate of Merit for outstanding accomplishments in course work and excellence in total academic performance.

American Society of Animal Science Scholarship Awards

Students must rank scholastically among the top 10% of their class in the College of Agriculture. The following junior and sophomore animal science students qualified:

Juniors:	Jean Bybee	Sophomores:	Faye Allis
	Linda Doggart		Mary Carroll
	Henry Parsons		Pamela Roecker
			Margaret Sterni
			Carol Tomkiewicz

COLLEGE OF AGRICULTURE

ACCOMPLISHMENTS AND HIGHLIGHTS

NON-RESIDENT INSTRUCTION

The development, training of state and county staffs, and pre-testing of the computerized Extension Management Information System was completed prior to implementation July 1, 1968. This nationwide program is a reporting system for staff, and a planning and control system for administration. Massachusetts was one of four states participating in the pilot program during the past year in cooperation with the Federal Extension Service.

Fifteen non-professional aides were utilized in support of Cooperative Extension work throughout the state. Thirteen of these positions were financed by other agencies.

Massachusetts has been a leader in the national campaign to establish a new procedure for developing and adopting acceptable common names and terms on pesticide labels. Confusion presently exists because so many organizations coin names for materials which do not appear on labels. This nullifies the use of the slogan "Read the Label" for safe pesticide use. A Massachusetts proposal that a single federal agency be given the authority to develop and standardize names for pesticides has been accepted by national scientific and professional societies. A change in procedure to correct the existing situation is expected shortly.

The Departments of Agricultural Engineering and Plant and Soil Sciences co-sponsored a New England Apple Harvesting and Storage Symposium focused on research developments applicable to the region.

In addition to courses of instruction and seminars pertinent to the animal industries of the Commonwealth, several adaptability studies in cooperation with Regional Specialists were completed. These studies have provided data for several publications deemed important by the animal industries.

Progress has been made to insure that the Pesticide Chemical Information Center at the University has complete information available on federal and state laws pertaining to pesticides. Nearing completion is a reference of labels for each of the products currently registered with the State Department of Public Health. The Center also has a file listing the names of medical directors or physicians associated with suppliers of the more hazardous materials as a source of emergency information should poisoning occur.

Inter-state cooperation is exemplified by sponsorship of a Dairy Housing Seminar by the Departments of Agricultural Engineering at the Universities of Massachusetts and Connecticut at West Springfield in March. This program is part of the Cooperative Extension activity of the two departments in cooperation with the Regional and County Extension Services of both states.

EXAMPLES OF EXTENSION PROGRAMS CARRIED ON BY THE COLLEGE FACULTY AND COUNTY AND REGIONAL STAFFS

The following Plans of Work represent significant examples of Extension programs either completed during the year, in progress, or scheduled for 1968-69. Each state and county staff member also submits a Plan of Work Projection, Activity Report, and Progress Report as other major components of the new Extension Management Information System now in operation.

Plan of Work

TITLE OF ACTIVITY:	Dairy Herd Management
COOPERATING SPONSORS:	Cooperative Extension Service, Regional and County Extension Services.
AUDIENCE:	Commercial dairymen and purebred breeders
PURPOSE:	To instruct dairymen and breeders in the latest scientific and technical knowledge concerning dairy cattle management, which will enable them to gain the greatest profit.
CONTENT:	Physiology of reproduction Factors affecting breeding efficiency Management of the dairy calf Factors affecting herd size and production Methods of managing the herd
FACULTY:	Prof. S.N. Gaunt, Assoc. Prof. R.G. Light, Prof. D.N. Stern, U.of M.; and Regional Dairy Specialists
GUEST LECTURERS:	Dairy farmers, panel members
METHOD:	Evening meetings - some summer twilight on the farm sessions Articles in the Massachusetts Dairy Digest Veterinary abstracts Dairy Farmers' Seminar Conferences on breeding efficiency with artificial breeding associations
LOCATION AND DATE:	Meeting in each of the three regions Seasonal articles in Massachusetts Dairy Digest and Veterinary Abstracts Seminar in January, 1969, University of Massachusetts
ATTENDANCE:	400

Plan of Work

TITLE OF ACTIVITY: Prevention and Control of Insects and Avian Diseases

COOPERATING SPONSORS: Massachusetts Extension Service

AUDIENCE: Massachusetts Poultry Industry

PURPOSE: To conduct an educational program on methods by which poultry flocks may be protected from loss or discomfort caused by disease, pests and parasites

METHODS:

A. Classroom Instruction and Publications
Faculty: U. of M. Staff
Location and Date: "Featheredfax", quarterly, 1968-69
Circular letters, Fly Control, April
Vaccination Program, as required
Other Health Problems, as required
Tri-State Poultrymen's Seminar, Pioneer Valley, February
Poultry Management Seminars, state wide November and February
Northeastern Turkey Producers Conference, January
"Management of Caged Layers" available for distribution, August
In-service training and professional improvement, continuing

B. Diagnosis of Poultry Diseases
Faculty: Profs. G. Faddoul and G. Snoeyenbos, U. of M.
Location and Date: As required

C. Mycoplasma Gallisepticum Immunization Program
Collection, summarization of field data
Faculty: Profs. G. Faddoul, R. Grover, U. of M.; Messrs. Knight, Ruggles, Yergatian and Spear, Regional Staff
Location and Date: State-wide, July and continuing
Attendance: 15 cooperators
Distribution of results to the poultry industry

D. Farm Security
Faculty: U. of M. Staff
Location and Date: State-wide, continuing

CONTENT:

Development of security measures to insure against exposure to and spread of poultry diseases
Maintenance of flock sanitation programs
Collection and analysis of field data evaluating the performance of Mycoplasma Gallisepticum immunized flocks

Plan of Work

TITLE OF ACTIVITY:	Environmental Biology
COOPERATING SPONSORS:	Cooperative Extension, Department of Environmental Sciences, Massachusetts Association of Conservation Commissions, Massachusetts Department of Natural Resources, and Massachusetts Department of Public Health
AUDIENCE:	Conservation Commissions, other government planning agencies
PURPOSE:	To instruct conservation comissioners on biological aspects of resource planning with particular reference to pollution and planned prevention. (Principles and Practices of Resource Planning.)
METHOD:	Short Course, Clientele Counseling
CONTENT:	Air Pollution - biological effects and prevention Water Pollution - biological effects and prevention Land Pollution - biologican effects and prevention Integration and Environmental Planning
FACULTY:	Profs. J.A. Naegele, H. Gunner, W. Feder, U. of M., Mr. J. Putnam
GUEST LECTURERS:	Mr. J. Dallas and others
LOCATION AND DATE:	Waltham - October and November, 1968
ATTENDANCE:	100

Plan of Work

TITLE OF ACTIVITY: Herbicides for Fruit Plantings

COOPERATING SPONSORS: Regional Extension Services, U. of M. Faculty and Geigy Chemical Company

AUDIENCE: Fruit growers

PURPOSE: Conduct studies and educational programs designed to enable fruit growers to control undesirable vegetation in a safe, efficient and economical manner

METHOD:

A. Conduct adaptive studies to determine:
Response to, the effect upon and residual implications of the application of herbicides singly and in combination upon apple and peach trees; and the effect of simazine upon micro-organisms in soil under apple trees

B. Analysis of data and the development of conclusions and recommendations from adaptive studies for presentation at continuing education and professional meetings, and for publication

C. Conduct result demonstrations to show the effects of certain herbicides and combinations of herbicides in small fruit plantings

D. Clientele counseling, circular letters, Fruit Notes and meetings

CONTENT: Response of fruit crops to herbicide applications, herbicide persistence in soil, recommended usages, and herbicide application methods

FACULTY: M. G. Fultz, D.A. Marini and G.E. Wilder, Regional Fruit Specialists; Profs. W.J. Lord, H.B. Gunner, J.W. Kuzmeski, and R.A. Damon, Jr., U. of M.

GUEST LECTURERS: Geigy Chemical Company

LOCATION AND DATE:

A. Adaptive studies at the Horticultural Research Center, Belchertown, and in grower plantings in Bristol and Franklin Counties

B. Meetings in Northeast Region - April, May, 1969; Pioneer Valley - May, 1969; Southeast Region - June, 1969; and State-wide - July, 1968

ATTENDANCE: 215

Plan of Work

TITLE OF ACTIVITY:	Forest Management
COOPERATING SPONSORS:	Cooperative Extension
AUDIENCE:	Berkshire County Industrial Development Commission, the woodusing industry, forest landowners and professional foresters
PURPOSE:	To teach the understanding of, and develop the potential of available forest resources for fiber and multiple forest land uses
METHOD:	Single Event, Short Course Continuing Activity, Clientele Counseling, Planning, Preparation
CONTENT:	Develop and interpret forest inventory data Instruct in principles of forest management for commercia timber production Instruct in principles of multiple-use forest management Develop resource information basic to forest products industrial expansion
FACULTY:	Profs. John H. Noyes, William P. MacConnell, Harold B. Gatslick, William W. Rice, Carl A. Carlozzi, U. of M.
GUEST LECTURERS:	Industry and Association representatives
LOCATION AND DATE:	University of Massachusetts and Pittsfield throughout 1968-69 - 4 to 8 meetings
ATTENDANCE:	3 - 50

Plan of Work

TITLE OF ACTIVITY: Marketing Management and Quality Control

COOPERATING SPONSORS: Massachusetts Extension Service

AUDIENCE: Massachusetts Poultry Industry and Consuming Public

PURPOSE: To conduct studies and an educational program on methods by which poultry and poultry products may be produced, processed and marketed in an orderly fashion, and with regard for the protection of consumer health

METHOD:

A. Individual Clientele Counselling
   Faculty: U. of M. Staff
   Location and Date: State-wide, 1968-69 (continuing)

B. Classroom Instruction and Publications
   Faculty: U. of M. Staff
   Location and Date: "Business Management Newsletter", monthly
   "Featheredfax", quarterly
   Circular letters, as required
   Tri-State Poultrymen's Seminar, Pioneer Valley, February
   Northeastern Turkey Producers Conference, January
   School Lunch Supervisors Workshops, June
   NEPPCO Egg Quality School, June
   "The Purchase and Care of Eggs by Food Service Establishments", available for distribution, June
   "Quality Control in Shell Eggs", available for distribution, September
   Processing Facility Renovation Workshops, regional, September and October
   In-service training and professional improvement, continuing

C. Consumer Egg Consumption Adoptive Study
   Faculty: Prof. D. Storey and C. Yergatian, Regional Extension Staff
   Location and Date: New England population centers, Summer

CONTENT:

Identification of Egg Consumption Patterns and Trends
Efficiency in the Utilization of Processing and Marketing Resources
Quality Control and Sanitation
Evaluation of the Egg Pricing Structure

Plan of Work

TITLE OF ACTIVITY:	A Study of the Effects of the Wholesome Meat Act
COOPERATING SPONSORS:	Food Distribution Program, Cooperative Extension Service and the Massachusetts Department of Public Health
AUDIENCE:	Boners and cutters and other meat processing firms and Massachusetts meat inspectors
PURPOSE:	To conduct a study and an educational program designed to assist boners and cutters in meeting the requirements of the Federal Wholesome Meat Act
METHOD:	A study will be made to determine the plans and problems of meat boners and cutters as a result of the Wholesome Meat Act. An educational program will then be developed to assist boners and cutters in understanding and adapting to the requirements of the Act. Publication of results will be the major method used.
CONTENT:	Alternative inspection arrangements and their respective costs Physical changes required by the requirements of the Act and their effect upon the operating costs of boners and cutters Improving the understanding of the Act and its requirements by boners and cutters
FACULTY:	Prof. T.W. Leed, Mr. Richard Tomeo, U. of M.
LOCATION AND DATE:	Throughout the state and during 1968-69

Plan of Work

TITLE OF ACTIVITY: Production Management

COOPERATING SPONSORS: Massachusetts Extension Service

AUDIENCE: Massachusetts Poultry Industry

PURPOSE: To conduct studies and educational programs which present methods by which poultrymen may improve production through the efficient application of technology and husbandry practices

METHODS:

A. Individual Clientele Counselling
   Faculty: U. of M. Staff
   Location and Date: State-wide, 1968-69 (continuing)
B. Production Records Projects
   Faculty: Messrs. E. Spear and H. Knight, Regional Staff
   Location and Date: Southeast and Pioneer Valley Extension Regions, continuing
   Attendance: 25 cooperators
C. Poultry Lighting Adaptive Study
   Faculty: L. Ruggles, Regional Specialist and U. of M. Staff
   Location and Date: Northeast Extension Region, September to January
D. Classroom Instruction and Publications
   Faculty: U. of M. Staff
   Location and Date: Southeastern Massachusetts Management Workshops (3), September, March and June
   Tri-State Poultrymen's Seminar, Pioneer Valley, February
   Northeastern Turkey Producers Conference, January
   Poultry Management Seminar, statewide, November and February
   Small Flock Management Leaflets Available for distribution, August
   "Management of Caged Layers", Available for distribution, August
   Newsletter, "Feed Cost Evaluation", monthly
   "Featheredfax", quarterly
   Circular letters, as required
   In-service training and professional improvement, continuing

CONTENT:

Feeding Systems
Diet Evaluation
Breed Improvement
Rearing and Growing Practices
Caged Management Technology

Plan of Work

TITLE OF ACTIVITY: Mechanization and Labor Efficiency in Vegetable Production

COOPERATING SPONSORS: Departments of Plant and Soil Sciences and Environmental Sciences and the three Extension Regions

AUDIENCE: Vegetable producers

PURPOSE: To conduct studies and educational programs to enable vegetable growers to alleviate the problem of scarce and high cost labor on Massachusetts vegetable farms

METHOD:

A. The collection, analysis and evaluation of data regarding:
   - Corn Harvesters
   - Pickling cucumber harvesters
   - Tomato harvesters
   - Labor and equipment

B. Presentation of results of the above studies and other available information on labor, labor saving machines, methods or materials to vegetable growers through movies, subject-matter circular letters, "Vegetable News & Notes", meetings, demonstrations, and individual counselling

CONTENT: Effective labor supervision and management to increase labor productivity and efficiency by: (1) labor management and supervision including human relations, (2) Use of labor saving work patterns, (3) Use of labor and equipment, (4) Use of labor replacement equipment and materials.

FACULTY: Profs. C.L. Thomson, Plant & Soil Sciences and R.E. Young Environmental Sciences, U. of M.; and W. Melnick, Regiona Crops Specialist; D.A. Marini, Regional Agricultural Specialist; R. Alden Miller, Regional Agricultural Specialist

LOCATION AND DATE: July 1, 1968 to July 30, 1969 throughout the three Extension regions and at winter meetings of the New England Vegetable Growers' Association at the Waltham Field Station and the Hampden County Improvement League, West Springfie and a summer meeting in Feeding Hills

ATTENDANCE: 1100

Plan of Work

TITLE OF ACTIVITY:	Thermal Process Requirements for Canned Foods
COOPERATING SPONSORS:	Cooperative Extension, Department of Food Science and Technology
AUDIENCE:	Representatives of Food Canning Industry
PURPOSE:	Instruct food industry personnel in the theory and application of establishing heat requirements of canned foods to maintain optimum sterilization and quality
METHOD:	Continuous seminar for 4 days
CONTENT:	Food and micro-organisms Methods of calculation Data gathering Temperature measurement Retort design Use of glass and metal containers Solution of problems
FACULTY:	Profs. C. R. Stumbo, K. M. Hayes, F. M. Clydesdale, W. B. Esselen, J. W. Zahradnik; Mr. Gonsalves and G. L. Howard, U. of M.
GUEST LECTURERS:	G. R. Bee, National Canners Association; H. C. Scott, Owens-Illinois; L. N. Kuzminski, School of Engineering, U. of M.
LOCATION AND DATE:	Amherst, November 7, 8, 9, 10, 1967
ATTENDANCE:	35 (U. S. and Canada)

Plan of Work

TITLE OF ACTIVITY:	Increasing Efficiency and Profits from Fish and Seafoods in Food Service Establishments
COOPERATING SPONSORS:	Restaurant and Hotel Management Extension Program, Department of Food Science and Technology; and Bureau of Commercial Fisheries, United States Department of the Interior
AUDIENCE:	Owners, managers, and other employees of food service establishments
PURPOSE:	Teach food service operators how to increase the efficiency of their operations involving fish and seafoods, especially as they relate to quality control and cost control, and increase their profits from these products
METHOD:	Seminar of six, 3-hour sessions; preparation of educational materials
CONTENT:	Consideration of: Markets, supply, price outlook Purchasing, receiving, storing, handling Preparations and preparation Service Merchandising Increasing efficiency and profits
FACULTY:	Charles E. Eshbach; Robert F. Lukowski, and Clifford Robertson, U. of M.
GUEST LECTURERS:	Personnel of the Bureau of Commercial Fisheries and people from the fisheries and food service industries
LOCATION AND DATE:	Waltham, in September and October, Worcester area, December and January, 1968; and West Springfield, in March and April, 1969
ATTENDANCE:	45 to 100

Plan of Work

TITLE OF ACTIVITY:	Home Management for the Physically Handicapped Homemaker
COOPERATING SPONSORS:	State and County Extension Services and others as: Visiting Nurses Association Massachusetts Commission for the Blind Massachusetts Association for the Blind Massachusetts and regional Heart Associations
AUDIENCE:	Homemakers (Disadvantaged), Individuals (Disadvantaged) and Professionals
PURPOSE:	To teach and provide information and material that will be of assistance to the physically handicapped homemaker in maintaining her individual independence, and in assuming her responsibilities as a wife and mother.
METHOD:	Short courses, single event, clientele counseling, professional improvement, workshops
CONTENT:	Adaptation of resources of the home to daily living needs and jobs performed by the physically handicapped homemaker
FACULTY:	Verda M. Dale, U. of M. and County Home Economists
GUEST LECTURERS:	Therese DiPippo, Massachusetts Department of Public Health Home Teachers of the Blind Visiting Nurses
LOCATION AND DATE:	To be determined as county programs develop
ATTENDANCE:	65

Plan of Work

TITLE OF ACTIVITY:	Developing Competence in Family Financial Matters
COOPERATING SPONSORS:	State and County Extension Services, Extension Divison of Home Economics
AUDIENCE:	Families (general), families (low-income), professionals
PURPOSE:	To provide instruction to help families learn and apply the management process in planning and expending their family resources so as to achieve their family and individual goals
METHOD:	Long course, short course, single events, clientele counseling
CONTENT:	Analysis of financial situations Definition of individual and family goals Information and knowledge about resources Development of techniques for using resources effectively
FACULTY:	Verda M. Dale, U. of M., state specialists, and County Home Economists
GUEST LECTURERS:	Representatives from banks, credit unions, insurance companies, bar associations, Social Security Administration, etc.
LOCATION AND DATE:	Eastern Counties (continuing)
ATTENDANCE:	300

Plan of Work

TITLE OF ACTIVITY:	Sex Education
COOPERATING SPONSORS:	Extension Division of Home Economics
AUDIENCE:	Nurses, physicians, teachers, school administrators, counselors and social workers from Greater Boston area
PURPOSE:	To instruct students in use of educational resources available; acquaint them with successful programs in various parts of the country; provide an opportunity to exchange ideas and information; and to discuss sex education programs and problems in the Commonwealth
METHOD:	One 3-hour class per week for six weeks. Seminar lectures, group discussion, outside readings, writing of a paper. Minimum of 30 hours work for certificate
CONTENT:	Transition in sex values and implications for education The "sexual revolution" and the American family Sexual learning and sexuality in the child and adolescent Coordination of sex education with developmental stages Premarital sex standards in todays society Venereal disease and social health Contraceptives, abortions and deviation Sex education in the context of family life education The goals of health sexuality and responsible morality
FACULTY:	Joseph T. Burroughs, Department of Human Development
LOCATION AND DATE:	University of Massachusetts, Boston, Oct. 2 to Nov. 5, 1967
ATTENDANCE:	170 per evening session

Plan of Work

TITLE OF ACTIVITY:	Science in Action Career Guidance
COOPERATING SPONSORS:	Extension Division of 4-H and Youth Programs and Departments of: Veterinary and Animal Sciences Forestry and Wildlife Management Agricultural Engineering Plant and Soil Sciences Entomology and Plant Pathology Agricultural and Food Economics Food Science and Technology Environmental Sciences
AUDIENCE:	High school science teachers and selected junior students
PURPOSE:	To inform students of opportunities for study in the agricultural sciences; to demonstrate the use of basic scientific equipment in solving problems of our society; and to establish a continuing scholarly relationship between faculty and secondary school teachers and students
METHOD:	Individual research laboratory workshops of one-day duration. Demonstrations, lectures, discussions, question and answer periods
CONTENT:	Research projects being conducted by departments of the College
FACULTY:	Scientists of the seven cooperating departments in the College
LOCATION AND DATE:	Two separate conferences at University on November 2 and November 9, 1967
ATTENDANCE:	550: 435 students and 115 instructors

Plan of Work

TITLE OF ACTIVITY:	TV Science -I Series
COOPERATING SPONSORS:	Extension Division of 4-H and Youth Programs
AUDIENCE:	Elementary and junior high school students
PURPOSE:	Teaching of youth to increase their basic scientific knowledge
METHOD:	Series of 10 instructional programs utilizing scientists of institutions of higher learning
CONTENT:	Chemical changes Introduction to the atom Gravity, flight, plants and animals Sound around us Science in insects Simple machines
FACULTY:	James Culver, Thomas Lumis, James Fitzgerald, Albert Londe, C.F. Hoffman, Michigan State University
LOCATION AND DATE:	WTEV-TV, New Bedford January 13 through March 23, 1967 WGBH-TV, Boston January 24 through March 27, 1967 WWLP-WRLP-TV, Springfield, Greenfield February 3 through April 6, 1967
ATTENDANCE:	67,000 persons including unsolicited enrollment of age group 6 to 60 Almost 275,000 requests for information, and involvement of more than 9,000 teachers in 1300 schools of the Commonwealth

Plan of Work

TITLE OF ACTIVITY:	Roxbury-Dorchester 4-H Program
COOPERATING SPONSORS:	Cooperative Extension Service Massachusetts 4-H Foundation Roxbury-Dorchester Community Beautification Committee Massachusetts Horticultural Society
AUDIENCE:	Adult residents and youth of the Roxbury-Dorchester area of Boston.
PURPOSE:	To provide educational experiences for urban youth, to provide opportunities for young people to become actively involved in community improvement programs, to improve living conditions in Roxbury-Dorchester, and provide leadership opportunities for adults.
METHOD:	Instruction and demonstrations resulting in: 16 vacant and unkempt lots being cleared, planted to flowers and shrubs, and cared for as a practical demonstration of what can be accomplished through 4-H horticultural programs. Local youth worked under the leadership of volunteer local adults.
CONTENT:	Horticultural science techniques involving: Preparation of site and soil Planting of flowers and shrubs Care and maintenance of flowers and shrubs Informal landscaping
FACULTY:	Profs. Merle L. Howes, William W. Metcalfe, Everett B. Hatch, Mildred L. Howell, Extension Division of 4-H and Youth Programs, U. of M.; Prof. Herbert C. Fordham, Department of Environmental Sciences, U. of M.
GUEST LECTURERS:	Volunteer specialists including YMCA program director, Public Works foreman, auto dealer, landscape gardener and others from Boston area.
LOCATION AND DATE:	July 1, 1967 through June 30, 1968
ATTENDANCE:	535 active participants including 500 youth and 35 adult leaders; plus efforts of 200 neighbors and residents in the 16 areas improved.

ACCOMPLISHMENTS AND HIGHLIGHTS

RESEARCH

Herbert O. Hultin, Department of Food Science and Technology, received the 1968 Award of Research by the Institute of Food Technologists for "outatanding ability in research in food science by an investigator 35-years-old or younger." The award included a $1,000 honorarium.

The Department of Soil and Plant Sciences has been awarded a five-year contract of $250,000 from the Massachusetts Department of Public Works and the Bureau of Public Roads to support Roadside Development research.

Interdisciplinary research within the College and University continues to increase as the best solution to problems and conditions affecting the well-being of the citizens and economy of the Commonwealth:

> Four departments, Entomology, Plant Pathology, Forestry and Wildlife Management, and Plant and Soil Sciences are jointly investigating "The Etiology of Maple Tree Decline."
>
> The Institute of Agricultural and Industrial Microbiology will conduct a Technical Guidance Center for Industrial Water Control to be established under the Commonwealth "Technical Resource Service School of Engineering";and investigate slime infestations in the Connecticut River with the Technical Committee, Fishery Management of the river.
>
> The Department of Veterinary and Animal Sciences, Zoology, and Biochemistry are cooperating in Physiology of Reproduction research and graduate student training under a N.I.H. grant.

The Department of Environmental Sciences has been awarded a contract by the National Center for Air Pollution Control to study the effects of air pollutants on vegetation.

A survey of the cranberry industry in Massachusetts financed by the Massachusetts Legislature and the Federal Government has been completed for issuance in publication form. The Cranberry Experiment Station, the State Department of Agriculture and the U.S.D.A. Crop Reporting Service cooperated.

Eleven Post-Doctoral Fellows contributed to research during the year: two at the Cranberry Station; three each in the Departments of Environmental Sciences, Food Science and Technology, and Veterinary and Animal Sciences.

Richard A. Rohde, head of the Department of Plant Pathology, spent six months as a visiting scientist in the Nematology Department, Rothamsted Experimental Station, Harpenden, Herts., England. The department comprises the largest group of nematologists in the world. Dr. Rohde collaborated in nematode research studies similar to his own investigations, and was invited to present a paper on the "Mechanisms of Nematology Resistance" at the First International Congress of Plant Pathology in London this summer.

RESEARCH PROJECTS

DEPARTMENT OF AGRICULTURAL AND FOOD ECONOMICS

J. B. Wyckoff, Head

MARKETING AND FOOD DISTRIBUTION

The Structure of Eastern Grain Rates

A. A. Brown

Research centered around: (1) a consideration of rail costs of moving grain and grain products using engineering-economics and budgeting techniques as an alternative for supplement to the ICC costs and rate making; (2) a determination of the impact of alternative rate systems on freight charges on grain and grain products within and between subregions in the east and west origins; (3) the determination of supply areas indifference curves in terms of rates to eastern subregions; and (4) the determination of minimum cost distribution areas for feed manufacturing and distribution in terms of existing mill locations.

Adjustments Needed in Marketing Northeastern Poultry Products

David A. Storey

Current egg marketing systems and practices in New England are evaluated in a publication prepared. A case study of the usefulness of egg marketing contracts in coordinating purchases and sales of a cooperative egg packing firm is in the final stages of analysis. A simulation model to analyze interrelationships between the egg industry and the rest of the economy will be developed.

Marketing of Seafood and Industrial Fisheries Products

A cross section study of consumers in two northeastern cities indicated the importance of availability and quality in the sales of fresh fish and suggested that prior to the abolition of meatless Fridays by the Catholic Church, non-Catholics bought fresh fish as often as Catholics if it were frequently available in grocery stores. A related cross section study of consumers in the Springfield SMSA is in the analysis stages. A study is underway of short-run demand functions for selected fish species based on weekly data from five stores of a case study food chain.

Economic Evaluation of Marketing Alternatives for Agricultural Produce from Federal Land Development Authority (FLDA Schemes in Malaysia)

Bradford D. Crossmon (Alladin Hashim)

Objectives: (1) To describe prevailing marketing methods among representative FLDA schemes related to the magnitude of the supplemental commodities being produced. (2) To determine which, of alternative marketing methods, under specified conditions of quantities of commodities available, accessibility of markets, perishability of product, etc. have been or will be most profitable for representative schemes. Fresh water fish from Scheme ponds and bananas appear as desirable supplemental crops for FLDA settlers.

Determination of the Magnitude and Costs of the Turfgrass Industry by Type Use Areas Within Middlesex County, Massachusetts

_____ (James T. Williams)

Objectives: (1) To determine production (establishment) and maintenance costs typical of turf areas. (2) To use and evaluate the photogrammetric method to obtain the total areas of turf production and maintenance in Middlesex County. (3) To determine the aggregate input costs of materials and services to produce (establish) and maintain turf. The determination of turf areas, by type, from aerial photos is nearing completion.

Economic Evaluation of Winter Storage For Specified Nursery Crops in Massachusetts

_____ (Robert D. Fitzgerald)

Objectives: (1) To appraise economic benefits from winter storage of specified evergreen nursery crops: Ilex, Juniperus, Leucothoe, Mahonia, Pieris, Rhododendron, Taxus, and Thuja. (2) To determine costs of storing, constructing, and operating alternative facilities for winter storage of evergreen nursery crops. (3) To estimate the impact on the nursery industry by increased use of winter storage.

Study of Boston Wholesale Flower Market

Elmar Jarvesoo

The most favorable relocation of the Boston wholesale flower market was analyzed because urban redevelopment in Boston is forcing the market out of the present downtown location near the business center. Some firms have already moved to new locations causing decentralization of a rather compact market. Since a major proportion of the retail florists are in or around the downtown Boston area, the present central location has great advantages despite crowded facilities and traffic congestion. The fate of the wholesale flower market is still uncertain, but it is quite possible that future firms may not patronize the market. Southern and southwestern suburban retail florists may attract some wholesale firms to locate in these areas.

Effects of Transparent Plastic Trays for Prepackaged Meat on Consumer Acceptance, Quality Factors, and Costs

Theodore W. Leed

A study was conducted in order to assess the important characteristics of new packaging materials for fresh meats sold at retail. Results indicated a high degree of consumer satisfaction with meats packaged in transparent plastic trays. Food retailers using the trays also indicated a high degree of satisfaction with no apparent increases in operating costs. Quality tests showed that the clear plastic trays resulted in significantly less weight loss of the product than the conventional pulp packaging tray. The results of the study will be of special importance to local and state legislative and regulatory agencies concerned with consumer protection.

Relationship of Display Space and Unit Sales in Dairy Products in Retail Food Stores

A study was completed to determine the relationship between retail display space in the sales of certain dairy products. The Universities of Delaware, Southern California, and Purdue also cooperated. The results indicate no significant relationships between display space and unit sales except for cottage cheese in Massachusetts and Delaware and three other product groups, each in only one geographical area. Results of this study will be of use to food distribution firms in increasing dairy product merchandising efficiency.

Economic Implications of the 1968 Wholesome Meat Act

A study initiated to identify the additional costs required by small meat processing firms to meet the requirements of the act and to determine the effects upon market structure and management practices in the meat industry.

Cost of Distributing Food in Low Income Areas

Donald R. Marion

The operating costs and profits of retail food stores in low income areas are being compared with those in stores in other areas. Other operating characteristics will also be compared from two types of stores. Previous studies have stressed comparison of food prices in low income areas with other areas and have established the fact that families in low income areas do pay higher prices for food than do other families. To date little attention has been given to an explanation of those higher food prices. Results of the study will be useful for public policy decisions regarding alleviation of the food buying problems of the poor and evaluating the performance of the retail food industry. It will also provide detailed information to retail food firms who may be considering low income area operation.

FARM MANAGEMENT AND PRODUCTION ECONOMICS

Competitive Environment of Massachusetts Agriculture

Earl I. Fuller

1. Hill and Valley Dairying--Stochastic simulators and data required to analyze the future of Hill-town and Valley dairying have been developed. Differences in comparative advantage exist largely in crop production. Preliminary analysis indicates little advantage to valley farms considering land prices, crop yields, and resources required if the scale is the same. Difficulties exist in some hill areas in acquiring enough land to operate at the scale deemed necessary in the years ahead.

2. Replacement Economics--Simulation of alternative replacement strategies is underway. Preliminary indications indicate little differences in mean outcome expectations with respect to growth in net worth and income.

3. Industry Projections--A methodological paper on projecting the state's dairy industry was prepared for the Dairy Adjustments Group in New Hampshire June 17.

4. Poultry Production--Data and models have been developed to analyze cage versus floor production and alternative marketing strategies.

5. Crop Production Functions--A graduate thesis indicates the current feasibility and applicability of functional design and analysis of crop research. A technical report is planned.

Farm Management Information Systems

1. Tabled Output for Linear Programming--One of the major limitations of the use of L.P. on farm planning problems is explaining the results to managers and other laymen without using mathematical language. An algorithm has been written which should overcome this difficulty.

2. Milk Production Functions--A computerized tabular analysis of milk-feed data under various price assumptions has been made. Results include optima levels and combinations for cows producing from 3.5 to 5.5% butter fat and from 8,000 to 16,000 pounds of milk per year.

Production Adjustments Needed in Massachusetts Carnation Industry

Elmar Jarvesoo

A study of carnation production costs shows that labor accounts for nearly 45% of the total, heating oil 10%, capital costs over 20%, and current crop expenses and operating costs nearly 25%. Some advantages associated with size of operations are evident up to 50,000 square feet of range. Labor productivity goes up and capital cost per square foot of productive area declines. Most promising avenues for reducing costs of production are increasing labor productivity and bloom yield per square foot. Increasing bloom yield is the most effective way to reduce fixed costs, mainly capital cost per bloom.

RESOURCE ECONOMICS

Private Outdoor Recreation Operations and Public Policy in the Connecticut Valley Region of Massachusetts

John H. Foster

This project will develop criteria for public policy towards development of outdoor recreation facilities in the public and private sectors. Part I which is nearing completion includes study of the existing relationships among the public, private non-profit, and private profit sectors of the industry and attempts to identify differences among the sectors by means of discriminatory analysis. Part II will study cost differences among the sectors and the distribution of costs and benefits among groups in society. Points where the private sectors fail to provide recreational conditions, facilities, and environments desired by society will be identified and alternative public policy for correcting these failings will be studied.

Impact of Manpower Training on Participating Trainees

About 100 men who participated in job training programs under the Federal Manpower and Development Training Act in Greenfield in 1965 will be interviewed. Employment and other socio-economic characteristics of these men, at the time they started training, will be compared with their situation in 1968 to determine the long range influence of the training on the men.

Economic Analysis of Coordinated Watershed Planning

J. B. Wyckoff

A case study of the feasibility of regional water pollution control systems is being conducted on a small watershed in Massachusetts. A model is being developed to test the hypothesis that the most economical method of water pollution control is an integrated regional (river basin) system. The optimal regional system will be determined and compared with the aggregation of pollution abatement projects now being instituted, both in terms of investment and operating costs, to determine if there are advantages of integrated pollution control.

Impact of Urban Growth on the Rural Countryside in Southern New England, Emphasis on Land Use Change

This project will examine urban development and its impact on the pattern of land use change. Historical development of the Springfield Standard Metropolitan Statistical Area will be determined. Factors involved in shaping the particular pattern of urban development which has occurred will be identified. The primary actors identified in urban development in this area will be interviewed and the rationale for their behavior in the growth process determined. The institutional environment within which the development has occurred and its influence on the pattern of development also will be studied.

Analysis of Public Costs and Revenues Associated with Growth in 82 Massachusetts Towns

James W. Callahan

Sources of revenue and expenditures for maintenance and capital outlays are being studied in 82 Massachusetts towns. Each community contained 10,000 or more people in 1960 and most have experienced growth since that year. Trends in aggregate revenue and expenditures are now being analyzed. Specific areas will be studied to determine existing relationships between certain variables. Regression analysis will be applied to test hypotheses.

DEPARTMENT OF AGRICULTURAL ENGINEERING

J. T. Clayton, Head

Seven of nine faculty members were actively engaged in research during the year. Four staff members had primary responsibilities for research and the guidance of 14 graduate students.

AGRICULTURAL ENGINEERING

Subsurface Irrigation Systems: Design Parameters

L. F. Whitney

The significance of subsurface irrigation lies in the potential for more efficient use of water. It appears possible to realize as much as a 40 percent reduction in consumption rates, when compared with overhead sprinkler systems. The main deterrent to the adoption of the subsurface method

has been the unreliability of orifices in buried pipes. Five systems of subsurface irrigation have been investigated, with the aim of designing an orifice which can be reasonably expected to operate trouble-free for long periods of time. A molded plastic insert in a plastic pipe was found to be the best performing orifice.

Improvement of Efficiency in Harvesting Apples

The harvest of Massachusetts' McIntosh apples becomes increasingly difficult because of the dwindling supply of experienced labor. A harvesting aid has been developed which compensates for inexperienced pickers and permits the use of hitherto unavailable labor. The machine developed is based on a telescoping platform principle and can accommodate as many as 16 pickers at 6 and 12 foot levels. A built-in conveying system permits bruise control and a means for filling standard 20 bushel bins. Cost of the machine had been projected at $500-$800 per picker as compared to picker positionners now available at $3000. Field grading can be accommodated, thereby increasing the efficiency of costly controlled-atmosphere storage.

BIOLOGICAL ENVIRONMENT ENGINEERING

Closed Systems for Animal Sewage Treatment

J. T. Clayton and L. F. Whitney

The characteristics of two modified activated sludge treatment systems for animal wastes were investigated. Although both systems produced substantial reductions in the pollutional strength of liquid dairy cattle manure (approximately 95 percent reduction in the biochemical oxygen demand or BOD), one system removed a significantly higher proportion of the total solids contained in the influent (86.8%, compared to 56.8%) than did the other. Since both soil and water pollution problems are related to the effectiveness of wastetreatment systems, work will be continued.

The effects of subsurface disposal of the final effluent from one of the treatment systems showed that BOD, as well as other indices of pollution strength, was greatly reduced (90%) by a one-foot percolation of the effluent through an agricultural soil.

Chemical and Non-Chemical Methods of Pest Control

E. A. Johnson

This work is part of a program aimed at reducing health hazards associated with the use of chemical pesticides on crops in food storages. Current research is aimed at finding a physical method of controlling the cockroach. In tests using electro-magnetic radiation, cockroaches have been found to be repelled to a greater degree by radiation in the germicidal (2537°A) region of the spectrum than by radiation in the visible region. It is possible that lamps emitting germicidal radiation could prevent cockroaches from infesting food storages and food preparation areas, thus reducing food losses and the danger of contamination by insecticides.

Environmental Requirements of Poultry

J. T. Clayton

Animals, like plants, respond to external stimuli such as light or temperature variations which can affect growth, production, and reproduction ability. A simulated chicken (a heat flux calorimeter) thermally similar to a real bird has been developed and is being used to determine the role that convection plays in a chicken's heat exchange with its surroundings under conditions of air and temperature stress. The understanding of this heat exchange and its physiological effect on chickens conceivably could be used to modify and manipulate certain environmental factors to help achieve an ideal bird.

BIOLOGICAL PROCESS ENGINEERING

Oyster Propagation in Packed Towers

J. W. Zahradnik and C. A. Johnson

A closed oyster propagation system comprised of eight separate 1-foot square metal-free chambers was designed, built, and evaluated from the standpoint of fluid flow characteristics. No significant differences were found for flow rates of 1, 3, or 5 lbs. of sea water per minute for the total chamber or for cells in the matrix within the chamber. This indicates that any differences in oyster growth rates in the various chambers could not be caused by variance in fluid flow patterns, but by differences in flow rates. Oyster spawn "sets" in the closed systems were superior to "unchambered" control matrices under natural conditions in the Wareham River. The closed chambers also showed an absence of parasites, no detrimental effects on oyster mortality due to lack of light, and less fouling by marine growth.

Heat and Mass Transfer Studies in Food Engineering

J. W. Zahradnik

Thermal process lethality calculations for heated canned foods were computerized. This represents the first commercially usable computer method for such calculations. Use of the computer shows that a combined error of ½°F. and ½ minute in the slope of the heating curve will produce a predicted spoilage of 190 cans per 10,000, more than eight times the amount of spoilage predicted if no process control errors are involved.

Studies of the thermal inactivation of cells of *Salmonella senftenberg* 775W show that the age of the cells significantly affects the characteristics of the survival curve in that older cells show less heat resistance than freshly harvested cells. Two component survival curves were observed and may be due to the presence of two inactivation mechanisms, the denaturation of cell DNA and RNA. Salmonella cell inactivation does not follow first order kinetics at temperatures up to 150°F. This aspect of Salmonella survival rates renders conventional thermal process calculations invalid.

A shared-time, automatically controlled C-A apple storage system was studied to establish its operating characteristics and then further examined by means of an analogue computer. The feasibility of controlling up to 12 controlled atmosphere storage rooms with only one set of O_2 and CO_2 controllers was established. This means that instead of an investment of $60,000, only $5,000 need be invested to control 12 C-A rooms.

High Temperature, Short Time Fluidization Drying for Forage

L. F. Whitney

Forage as a crop is in jeopardy in Massachusetts and much of the nation largely because an economical drying process of sufficient capacity and independent of the weather has yet to be perfected. Fluidization drying has this capacity with relatively low investment. Research on this process has resulted in basic data on operation, drying phenomena, and stomatal relationships. For example, fresh cut forage can be dried in 15 seconds at 500°F. without damage, and open stomata conditions give faster drying rates. The fluidization drying process has application for many agricultural products; but for forage and as a component of a field combine, it is possible that a single-pass machine could be developed to harvest freshly cut grasses or legumes, dry them "instantly", and pelletize the product.

Food Packaging and Handling Systems

S. W. Fletcher and G. A. Fitzgerald

Comparison tests of 14 different types of cake mix containers were made to determine their resistance to damage during handling and shipping. Results showed that 125-pound test corrugated board, although widely used, did not offer adequate protection; nor did the bundle wraps. None of the "overwrap" trays provided protection equal to that of slotted cardboard cartons.

CRANBERRY EXPERIMENT STATION

Chester E. Cross, Head

The research program of the department has grown substantially during the past year. Research grants have provided for one pre-doctoral fellow, two post-doctoral fellows and one technician. The new pesticides research facility will be occupied this summer.

AGRICULTURAL ENGINEERING

Bulk Storage of Cranberries

John S. Norton

Cranberries were stored successfully in 25-bushel containers for extended periods when forced ventilation through perforated tubes was provided. Lack of ventilation resulted in 50% or more increase in rot during 12-weeks storage in similar containers. At 40°F. ozone appears to have a slightly beneficial effect on storage, but at 60° a detrimental effect.

Harvesting of Cranberries

Work is underway on a new, dry-picking machine. An experimental picking head is undergoing tests to define major deficiencies.

Development of a means of subdividing bogs to facilitate harvesting, and equipment to remove the berries, detrash them and load them into trucks is under

study in water harvesting research. A conveyor for trash separation worked well in first tests. Diking methods tested indicated that earthen and corrugated steel dikes will prove most durable.

ENTOMOLOGY

Laboratory Rearing of the Cranberry Fruitworm

W. E. Tomlinson

Investigation of sex attractants, moth sterilization and studies of the cranberry fruitworm have been hampered by reluctance of moths to mate in captivity. The presence of non-blooming host plants on mature cranberries in the rearing chamber did not affect mating, whereas bouquets of blueberry blossoms resulted in a high percentage of matings and oviposition. The way is now open for continuous laboratory studies of this insect without having to resort to field collection of eggs or larvae.

Control of Cranberry Fruitworm Late in the Season

Cranberries containing cranberry fruitworm larvae plague growers and shippers in certain seasons. Examination of weather records revealed that fruitworms were troublesome in early shipment of berries in those years when sums of the monthly mean temperature of May, June, July and August totalled two or more degrees below normal. In such years a third insecticide application is needed to control these late larvae and usually the necessity can be determined by August 1, unless the cold trend is broken by a much warmer than normal August.

Insecticide Evaluation on Cranberry Insects

Field evaluation of new insecticides for greater effectiveness and safety than those registered and recommended for cranberry insect control revealed Dursban, Azodrin, Ciba 8874 and Geigy S 13005 to be as effective as parathion and Guthion for control of cranberry fruitworm. Imidan, Gardona and Zolone were less effective but still gave commercially acceptable control. Moban did not give acceptable control and Ciba 9491 was phytotoxic.

EXPERIMENTAL BIOLOGY

Nematode and Nematode-Host Relationships

Bert M. Zuckerman

Growth of a pathogenic nematode on a chemically defined medium has been accomplished to the point where one generation is completed in holidic culture. Three fatty acids and soluble RNA from yeast have been found to stimulate growth and result in a small, but consistent rate of maturation. This culture of a nematode is important in continuing studies to determine the physiology of nematode-host relationships, host resistance, and the role of nematodes in their pathogenic relationships to plants.

The study of ectoparasitic nematode-plant host interactions continues with the introduction of a fungus as a variable in seeking to define the role of ectoparasitic nematodes in inciting disease.

PESTICIDE, HERBICIDE INVESTIGATIONS

Fate of Pesticides in Cranberry Soils and Reservoirs

Karl H. Deubert

Parathion applied to cranberry bogs for the control of fruitworm and other pests was found to be undetectable in drainage waters from the bog if drainage was stopped for 48 hours following treatment. Dieldrin translocation showed that only minute amounts moved downstream and appeared to take place as adhered dieldrin on organic particles. Growers were advised to drain flood waters slowly to minimize the turbulence of flow and reduce the displacement of organic matter downstream. Dichlobenil persistence in cranberry soils has been established. Impounding of drainage waters for one day following treatment appeared to prevent escape of the chemical downstream.

Herbicide and Fertilizer Studies

Irving E. Demoranville

Testing of herbicides for weed control in cranberries is aimed at finding effective controls for bramble, poison ivy and nut grass; and to find less hazardous substitutes for some of the present herbicides. Alanap plus appears promising for nut grass control and may be safer to use.

Malathion and silvex appear promising as inducers of anthocyanin development in cranberries to hasten ripening for earlier harvest of well colored fruit.

The herbicide Casoron apparently inhibits root development. Inhibition is associated with concentration and elapsed time after treatment.

Yields and size of fruit increase when nitrogen fertilizer is applied and supplemental irrigation is given when necessary.

Plant Physiology

R. E. Devlin

Plant growth regulators have been screened for those that accelerate uptake and translocation of systematic pesticides by plants grown under sterile root culture conditions. The objective is to significantly reduce the amount of pesticide necessary for the complete control of a number of pests (weeds and feeding insects).

Deficiency symptoms for nitrogen, potassium, and phosphorus have been observed under different light and pH conditions in a study of the ecology of the aquatic weeds Potamogeton and Myriophyllum.

Investigation continues on the use of gibberellic acid (G/A) in cranberry culture to increase fruit set and berry size. The influence of G/A on the rate of elongation of root hairs of *Agrostis alba* L. also is under study.

DEPARTMENT OF ENTOMOLOGY

T. Michael Peters, Head

Graduate majors in the department total 24, five more than in 1967. The direction of graduate work and increased responsibilities in the classroom are limiting the time faculty members have available for their own research. The greatest obstacle to maximum departmental achievement is a lack of modern research facilities.

ECOLOGICAL INVESTIGATIONS

Biological and Biochemical Control of Mosquito Larvae

T. Michael Peters

Development this year of a non-sterile method of rearing mosquito larvae under uniform conditions--never before successfully accomplished--represents an important advance in mosquito control research. Through precise handling, scientists will be able to predict exactly when a mosquito population reaches larval maturity with a high degree of accuracy. Uniform growth of larvae under non-sterile conditions is significant in that mosquito workers refuse to use tedious sterile techniques, but will accept a non-sterile and relatively easy method. This new technique is expected to stimulate previously unpopular work in larval mosquito growth, dirunal periodicity and population effects along with new research on mosquito control.

Comparative Fecundity and Viability of Mosquitoes

This unsupported research is underway and nearing completion. The study compares fecundity and egg viability of *Aedes* and *Anopheles* when fed on a variety of vertebrate hosts; i.e. rabbit, man, guinea pig, hamster, turtle, frog, quail, and chicken.

Selective Breeding of Mosquitoes

Unsupported research is being conducted on the possibilities of selectively breeding a population of *Aedes* with stabilized, uniform developmental rates of both sexes. When completed, this project will tremendously aid laboratory methodology in experimental research on mosquito ecology.

ECONOMIC ENTOMOLOGY

A Comparison of the Sterility Effects of Radiation and a Chemosterilant on Males of Drosphila Melanogaster Meigen

Peter C. Steve

The control of insects by non-insecticidal means is an area of great interest. It has been demonstrated that animal populations can be effectively controlled or eradicated by continuous release of sterile males or by introducing a chemosterilant into the natural population. *D. melanogaster* is a pest of major concern in the food processing industry. This study will compare the effects of various levels of gamma radiation and a chemosterilant on sterility, mating behavior and longevity of males, and the ultimate effect toward population reduction.

Comparative Effects of Chemosterilants on Fannia Canicularis L.

Although of some medical importance, the great abundance of this insect, particularly in areas of poultry production, has incriminated it as a major pest of economic concern. Control of this nuisance pest by non-insecticidal means would be most desirable. The comparative effects of two chemosterilants regarding the sterilization efficacy on males and females, female fecundity, viability of eggs, longevity of treated individuals, histological effects and the ratio of sterilized males in a population to achieve control levels are being investigated.

Comparative Effects of Chemosterilants on Musca Autumnalis De Geer

First reported in Massachusetts in 1958, this insect is of major concern to horses and cattle across the country. Conventional control methods have proved inadequate, and the use of chemosterilants appears promising. The objectives of this study are similar to those described for Fannia, although the biology, ecology and rearing procedures differ markedly.

Toxicological Effects of Gardona to Fannia Canicularis L.

Gardona is a new insecticide of low mammalian toxicity. This property is highly desirable in controlling animal pests. There is a particular need for such a chemical in the poultry industry, where few insecticides may be used when birds are present. Also, the possibility of utilizing this compound as a feed additive is worthy of consideration. The levels of toxicant necessary for population control, through oral ingestion by poultry or by direct addition to their excrement is underway.

MORPHOLOGY AND PHYLOGENY

Mechanisms and Results of Evolution in Insects

John F. Hanson

The investigator and three graduate students have been conducting active research in the mechanisms and results of evolution in aquatic and terrestrial insects using various species from the Orders Diptera, Plecoptera and Trichoptera.

FOREST ENTOMOLOGY

Association of Insects with Decline of Maples

W. B. Becker

Decline of sugar maple trees in Massachusetts seems intimately associated with drought plus activity of man such as forest thinning and soil compaction. Decline has not been found in undisturbed forests, and no primary insects have been associated with the current decline. Based on the fact that insect outbreaks have been associated with tree decline elsewhere, two studies are in progress: (1) artificial defoliation tests and (2) observation on effects of a recent natural defoliation in one small stand of sugar maples. Artificial defoliation has been shown to cause more damage to saplings in: shaded areas than sunny open areas, in June than in August,

and to single branches on large, seemingly healthytrees than to entire saplings. Observations in the naturally defoliated plot are still incomplete.

APPLIED ENTOMOLOGY

Pesticide Residue in or on Raw Agricultural Commodities

Frank R. Shaw

Determination of residues on eight compounds and recommendations for their use as pesticides on forage crops and poultry farms in the Northeast Region has been completed. Residue determinations were made on parathion, methyl parathion, Furadan, Imadan, Thimet 600 and Niagara 10242 in green alfalfa and alfalfa hay; and ronnel and Rabona in the tissue and eggs of poultry. This residue data has been turned over to the pesticide manufacturers for submission to the Pesticides Regulation Division of the U.S.D.A. for the assignment of residue tolerances for the various compounds and clearances for their actual use.

Role of Parasites and Predators in the Control of Alfalfa Weevil

Investigations were made on the behavior of two parasitic enemies of the alfalfa weevil, *Bathylplectes curculonis* and *Tetrastichus incertus*. Parasitism by Bathyplectes ranged from 1 to 90% from May 28 to July 13. Tetrastichus parasitism ranged from 17 to 87% from June 5 to October 1. Development of parasites and weevils under controlled conditions is underway. Additional investigations were conducted on some of the other predators present in alfalfa fields. The most significant finding was the preferences of coccinellids for aphids, leafhoppers and alfalfa weevil larvae. Nabids preferred alfalfa weevil larvae to aphids, while other predators show little choice among their hosts.

SYSTEMATIC ENTOMOLOGY

Mosquito Larvae

Marion E. Smith

Taxonomic studies of mosquito larvae, primarily of the *Aedes* mosquitoes of New England, are being continued. One paper has been completed on the identification of early instars of the larvae, a field not covered by any previously published work. Studies are in progress on the difficult *Aedes punctor* complex as it occurs in the East, and on the report of a survey of the mosquitoes of Newfoundland and Labrador.

Graduate student, Duncan MacKenzie is continuing his comparative studies of the chaetotaxy of the various instars of the larvae of five New England *Aedes* species. His master's thesis, in which he reports finding precise methods of differentiating between second and third instar larvae, has been prepared for publication.

Graduate student Victor Gapud, is making a systematic study of the Collembola (spring-tails) of his home country, the Philippines, basing his work on extensive collections of his own. Few reports on Philippine Collembola exist. He has collected many new species, and systematic studies made for any one area inevitably contribute to a knowledge of the fauna of other areas.

DEPARTMENT OF ENVIRONMENTAL SCIENCES

John A. Naegele, Head

ACARINE POPULATION BIOLOGY

Mite Resistance to Chemicals

William A. McEnroe

This study of resistance in mites is based on a population structure including a restricted gene pool and a hybrid swarm. Eleven field populations have been evaluated and the presence of a supergene complex isolated. The breeding and genetic systems in wild populations are important precursors for all studies attempting to predict changes in resistance level. Behavioral responses, which control mite migration through the plants, are based on color vision. Behavioral types are switched on by ambient humidity and feeding activity.

Ecological Genetics

Resistance of greenhouse mites has shown a significant role for linkage in the resistance systems in wild populations. The genetic mechanism for the development of linked resistance system is the role of the haploid male which serves to select coupling phase chromosomes. The haploid male also accelerates the evolution of fitness of alleles incorporated by the selection procedure.

Chromosomal Reliability

Selection on the haploid male results in internal balance of the chromosomal set. This protects against inbreeding depression, but results in outcrossing depression. High fitness is selected through the haploid male. Selection on the haploid male results in the selection of coupling phase chromosomes.

AIR POLLUTION

Ozone Damage to Greenhouse Tomatoes

William A. Feder

Differential susceptibility of greenhouse tomato varieties to ozone damage has been confirmed, opening possibilities for developing an ozone-tolerant variety. Ozone injury also was observed on field tomato, squash, pumpkin, bean and white petunia varieties. Charcoal and glass wool filters were found to be equally effective in removing ambient ozone in chambers in which two carnation and one snapdragon crops were grown. The filtered chambers protected carnations from oxidant tip burn.

FOOD PLANT BIOLOGY

Cytogenetics, Morphology and Evolution of Corn and Its Relatives

W. C. Gallinat

Studies of corn's evolution have led to an investigation of a relationship between plant habit and adaptation. Differences in development, especially

in tillering and internode pattern, have resulted from the adaptation of the northern flint and the southern dent (parents of the Corn Belt dent) to the conditions of early agriculture and climate in northeastern and southeastern United States. There is a negative relationship between the ability of the tillering and single-stalked plant habits to yield in heterogeneous competition and in pure stand. In contrast to the results of competition in mixed stand, pure stands of the single-stalked habit are more productive per unit of land area.

Cytogenetic studies in progress should help to diagnose the evolution of corn and its relatives. By combining a genetic comparison with the usual criteria of chromosome morphology, the degree and nature of homeology and homology between corn and Tripsacum chromosomes can be determined with new precision. Certain Tripsacum chromosomes identical to corn chromosomes have been identified. Others have differed. A cytogenetic map comparing the 18 chromosomes of Tripsacum to the 10 of corn will be developed.

Selective Adaptability of Vegetables in Massachusetts

Robert E. Young

An investigation of the inter-relation variety and maturity of vegetables to yields of dry matter and the persistance of quality of a dried product as a guide to future manipulation. The first year on a development evaluation and testing program of verticillium-resistant varieties of tomatoes for the plastic greenhouses of western Massachusetts has shown the value of this program in acceptance and plantings. The final two generations of a back-cross program to incorporate resistance to five diseases in strains of both greenhouse and trellis tomatoes is complete. These diseases are verticillium, fusarium, cladisporium, nematodes, and tobacco mosaic. Tests in the greenhouse of both our new and older varieties show that they not only produce larger yields than varieties developed for other areas, but have a much longer shelf life.

ORNAMENTAL PLANT BIOLOGY

Carnation Breeding

Franklin Campbell

Selected parental lines for genetic single and fully double carnations were established for future breeding. Selection was based on commercial desirabilities such as flower color, height, branching, and general habit of growth. Twenty clones of genetic doubles and 12 clones of miniatures have been established as potential valuables for commercial usage. Varieties were subjected to ozone screening to observe their sensitivity levels. Results were negative.

Carnations--Supplemental Light

Plantings of the cultivar 'Wn. Sim' were subjected to supplemental light sources to determine the effect on production, quality and timing. Data are not complete but indications are that incandescent light hastens the crop to maturity one week earlier than other treatments. Superficial indications from this are that carnation timing and cropping can be controlled with supplemental light at a greatly reduced cost than previously thought.

Environmental Adaptability

Adaptability and regional receptiveness were studied for 205 varieties of annual bedding plants, and reports given to the originators for introduction, improvement and/or cultural methods. About 60 varieties of petunias are being screened for growth regulator responsiveness, and their potential decreased sensivity to air pollutions as a result of these regulators.

Environmental Control

Projects include the growth control and maturity of Ace Lilies through the manipulations of night temperatures, and sources of fertilizers, including the new slow-release fertilizers. Results indicate that some of these type fertilizers can be used with limited success, but that this success depends considerably on other cultural practices.

SOIL AND WATER POLLUTION

Fatty Acids from Neutral Lipid and Phosphatide Fractions of Atypical Mycobacteria

R. W. Walker

Structural studies of the individual lipids of mycobacteria have shown the fatty acid distribution (especially in the phospholipids) to be specific and limited to chain lengths of a narrow size distribution. Environmental and nutritional factors were found to have a very limited effect upon the type of lipid elaborated or the fatty acid distribution.

Molecular Bases for Pleomorphism in Arthrobacter Globiformis

Studies continue to determine at the enzymatic level the sequence of events that cause spherod pleomorphism in A. globiformis. Several pathways and enzyme reactions involved in the synthesis of mucopeptide precursors and assembly of these precursors appear to be sensitive to external factors such as cation concentrations, pH, and type of nutrient available resulting in aberrant wall synthesis.

Action Spectra and Culture of Pigmented Algae and Photosynthetic Bacteria

Glen Hemerick

The photosynthetic splitting of the water molecule is an efficient mechanism for conversion of solar energy to potential electrical energy. Development of a photochemical system based on this reaction requires certain amounts of purified pigment compounds for analysis and testing. Several kinds of photosynthetic systems suitable for this purpose are found in the algae and photosynthetic bacteria. This research is designed to provide adequate amounts of these selected species for biophysical investigations.

Methods were developed for photosynthetic production of 120 species of red-, green-, and blue-green algae and bacteria in defined media under controlled light and temperature. Pigments produced for this study include phycoerythrins, phycocyanins, bacteriochlorophylls and allophycocyanins. Research is underway for controlled production of allophycocyanins.

Response of Soil Microflora to Organophosphate Insecticides

Haim Gunner

Capacity of the insecticide Diazinon to exercise a selective effort on soil microflora has been examined further. Previous studies indicated soil microbial populations. Current studies show that Flavobacterium and Pseudomonas spp. predominance can also occur, depending on soil type, previous crop history and moisture levels.

Ecology of Free Water Microflora

Evidence indicates the presence of microbial metabolites governing predator-prey relationships among soil microbiota. Protozoa were selective in their ingestion of microbial populations. *Escherichia coli*, *Aerobacter aerogenes*, *Micrococcus flavus* and *Arthrobacter spp*. were consumed in a decreasing order of preference.

A metabolite which exercised a deterrent effect upon protozoa, a toxic effect upon tubificid worms, and a lethal effect on fish was found in Arthrobacter culture filtrates. Colonies of *E. coli*, on the other hand, were immediately ingested by tubificid and protozoan populations. This may offer insight into the ubiquity of Arthrobacter in the soil and the rapid disappearance of *E. coli* from the soil and water.

Anaerobic Pathogens in Low Temperature Environments

Warren W. Litsky

This research involves attempts to distinguish strains of toxigenic *C. botulinum* type E from other types of *C. botulinum* by their ability to metabolize single amino acids. Strains of type E were unable to break down three single amino acids, while these acids, among others, were metabolized readily by *C. botulinum* toxigenic types A and B and one nontoxigenic strain.

Factors Affecting the Survival of Microbes on Various Surfaces

A study to delineate the environmental factors affecting the survival of microbe on various types of floow surfaces, including carpets, indicate that the number of microbes in the air is related to the type of floor covering, activity and other factors such as humidity, temperature and air currents. Chamber-work results show that the cleaning and disinfecting process may contribute significantly to the number of bacteria in the air and indirectly to a public health hazard.

Arrest of Aging Process in Massachusetts Lakes Resulting from Man's Activities

A three-year cooperative effort to study the biological and chemical parameters of the water and sediments of five lakes in Massachusetts in the various stages of autrophication has been initiated in cooperation with the Biology Department of Clark University, and the Departments of Chemistry, Botany and Civil Engineering of the University.

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

W. B. Esselen, Head

During the past year the department had a graduate enrollment of 47. In addition to official Experiment Station research, outside support from government agencies and industry, as generated by the faculty, materially aided in maintaining the overall research program. Three post-doctoral fellows contributed additional support.

ANALYTICAL CHEMISTRY

Role of Volatile Organic Compounds as Food Flavor Components

Irving S. Fagerson

Seventeen compounds out of approximately 100 visible by gas chromatography have been identified. Six of these were previously unreported and one, 3-methylcyclopentane-1, 2-dione, shows a relationship to an enolic isomer which has been reported as being used to impart a maple flavor and as a flavor potentiator. Isolation and identification of the major volatile components of the juice of the cranberry is complete. Forty-two compounds comprising over 95% of the aroma complex have been identified.

The aromatic compounds (benzaldehyde, benzyl and benzoate esters) and the terpenes appear to be the major contributors to the aroma of cranberry juice. The remaining 5% of the aroma complex contains over 200 components, many of which appear to contribute significantly to the overall aroma.

BIOCHEMISTRY-ENZYMOLOGY

Enzymatic Control of Quality Factors in Edible Plant and Animal Materials

Herbert O. Hultin

Work continues on the glycolytic enzymes of chicken breast muscle with emphasis on their association with mitochondria and sarcolemmae. Progress has been achieved in understanding the mechanism of emptying of muscle cells based on data showing that the contractile proteins are of major interest rather than a cytoskeleton as reported.

The cellular location of lactate dehydrogenase (LDH) is important in that biochemists generally consider it to be a soluble cytoplasmic enzyme while cytochemical data indicate that it is located on the subcellular structures. It has been found that in fish muscle LDH is inactive when it is bound, but it is possible that an equilibrium between bound and soluble enzyme is involved in metabolic regulation.

A study of thelatency and solubilization characteristics of mitochondrial hexokinase (HK) from chicken breast muscle relates these two characteristics to the role of HK in mitochondrial glycolysis. The structural relationships involved among the enzymic systems are significant in the control of the rate of glycolysis, which is reported to be the principal factor influencing quality chicken meat.

DAIRY TECHNOLOGY

Deposition of Milk Solids on Heated Surfaces

D. J. Hankinson

This investigation centers on certain factors which influence the deposition of milk residues on heated pipe surfaces.

At flow rates less than 4,000 kg/hr the amount of soil greatly increased, soil deposits increased linearly as the temperature differential between milk and heating water increased linearly. Entrained air with milk during heating unexpectedly did not result in increased deposits. Greater deposits were noted on pickle finish pipes and progressively less on grit finishes. Teflon-coated pipe showed more soil, but the soil peeled away on drying and under most conditions would not contribute to a cleaning problem.

Fluid Dynamic Relationships Involved in Circulation Cleaning

This study concerns the removal of milk deposits on metal pipes using only fluid flow without benefit of detergents. Soil removal rate was linear at flow rates between 4,000 and 30,000 kg/hr demonstrating that cleaning effectiveness steadily improved as the pumping rate increased. The use of a spiral to convolute flow, and the application of water hammer were ineffective in improving deposit removal. Cleaning effectiveness also is affected when the laminar sublayer of the pipe interior wall becomes thinner under the higher (increasing) flow rates, and soil penetrates or is submerged in the sublayer.

FOOD COLORIMETRY AND BIOCHEMISTRY

Quality Maintenance and Control in Vegetable Marketing

F. J. Francis

Color and pigment content as they affect quality and appearance of fruits and vegetables during processing and storage is of concern. Studies with spinach, green beans and beet greens on chlorophyll and chlorophyllide content indicate a slight advantage in inducing enzymatic conversion to the latter form. With red paprika exposed to light and oxygen, 54 carotenoid compounds were found and 33 identified. In unbleached paprika, 37 were found and 21 identified. Attempts to minimize the loss are underway.

Studies with cranberries on the effect of oxygen and ascorbic acid on stability of individual pigments indicate that the galactosides are more stable, hence more desirable, than the arabinosides in cranberry juice cocktail. An infusion method has been developed to study pigment biosynthesis since a higher pigment contentis desirable.

FOOD SCIENCE

Spun Edible Protein Fibers

K. M. Hayes and W. B. Esselen

The spinning of edible protein fiber, and development of hydrolyzed vegetable protein food supplements is currently being investigated. Research includes factors influencing properties of fibers, incorporation of flavors into fibers, and study of forms or make-up of products acceptable to users of products.

MARINE FOOD SCIENCE

Extending the Keeping Quality of Fish and Fish Products

R. E. Levin

This research includes a study of the mechanism of fish preservation and a phage typing program for identification of fish spoilage bacteria. Five Ph.D. candidates, one M.S. candidate and supporting personnel carry out this fisheries program.

Effect of Low Temperatures on Quality and Marketability of Food Products

F. M. Sawyer

The interaction of flavor modifying effects of the food seasoning salt monosodium glutamate (MSG) and a mixture of 5'-tibonucleotides in three types of commercial soups was studied. A significant reduction in the total MSG requirement in the product was achieved by use of appropriate concentrations of the mixture of nucleotides in conjunction with lower levels of MSG. This produced the same level of flavor intensity without altering the attributes of the product's flavor. These findings may provide a basis for changes in certain food product formulations enabling manufacturers to realize significant reductions in production costs.

LIPID CHEMISTRY

Effects of Processing on the Chemical Composition of Foods

W. W. Nawar

Completion of work on the thermal hydrolysis of fats reveals that the rate of hydrolysis of fatty acid depends on the nature of the acid rather than its location on the triglyceride molecule. The formation of hydroperoxides has been shown to be the initial step in the oxidation of saturated fatty acids. Preferential oxidation was observed towards the center of the molecule. Pork fat, beef fat and fish oil were irradiated and the volatiles analyzed. A number of compounds have been identified and measured quantitatively, and their flavor significance is being evaluated. The effect of physical state of the fat on the formation of these compounds is under study.

MEAT SCIENCE AND TECHNOLOGY

Physical Characteristics of Packaged Meat

E. M. Buck

Investigation of the physical characteristics of beef packaged in foam, clear plastic and pulp trays was completed in cooperation with a M.S. degree candidate in agricultural and food economics. A publication is being prepared. Study continues on the effect of state of contraction during rigor on actomyosin formation and post-rigor shear strength of rabbit muscle.

MICROBIOLOGY

Physiology and Thermal Death of Bacterial Endospores

C. R. Stumbo

The efficacy of an ethylene oxide and dichlorodifluoromethane mixture as a sterilant for food spoilage organisms has been demonstrated on three new organisms. The gaseous mixture is highly effective against two strains of *Clostridium botulinum* Types A and B, and of one strain of *Bacillus subtilis*. Sterilization parameters are being established for dry food ingredients and containers used in aseptic canning techniques for release to the food industry; and as well for surgical and hospital supplies, pharmaceuticals, and spacecraft parts and vehicles. Research continues on the effectiveness of esters of parahydroxy benzoic acids as inhibitors of germination of and outgrowth from spores of *C. botulinum* in fish flesh. The methyl ester shows promise, and if effective, could be beneficial to the fresh and smoked fish industries, and to human health as a safeguard against food poisoning.

DEPARTMENT OF FORESTRY AND WILDLIFE MANAGEMENT

Arnold D. Rhodes, Head

The departmental graduate program numbers 41 students with 11 in fisheries biology, 15 in forestry, 10 in wildlife biology and 5 in wood technology. Research activity increased with the addition of new projects.

WOOD UTILIZATION AND TECHNOLOGY

Technological Properties of Wood - Tree Species

Harold B. Gatslick, R. Bruce Hoadley, and William W. Rice

Three new graduate research projects are near completion in this general study area. They deal with: the longitudinal shrinkage characteristics; the machined surface characteristics, and the drying characteristics of plantation-grown red pine.

Forced-Air Drying of Red Spruce and Eastern Hemlock

Harold B. Gatslick

Results of this study indicate that under current marketing, the forced-air dryi of spruce and hemlock is generally not economical. Both species can be dried successfully with 8/4 hemlock requiring considerably more control and time than spruce.

Cost Estimating Procedure in the Furniture Industry

In order for industrial management to exercise proper control over production, it is necessary that the costs of production be known. The objective of this project is to investigate existing techniques and trends in cost accounting and determining programs in the furniture industry, to identify weaknesses, and isolate desirable features in order to develop a model cost determining system.

FORESTRY AND RESOURCE DEVELOPMENT

Experiments in Direct Seeding

Herschel G. Abbott

Two methods of reforestation by direct seeding have been developed to the operational stage. One method was adopted during the past year by two private landowners. Other experiments include (1) direct seeding of paper birch on clearcut areas; (2) the development of dominance among seedlings on direct-seeded areas, and (3) the tracing of small mammal seed caches with the aid of radioactive isotope.

Selection of Optimum Uses of a Small Water Resource Subjected to Simultaneous Demand Stresses

Carl A. Carlozzi
(Robert B. Brander, Joseph Mawson, Roger J. Reed and William W. Rice)

The goal of this planning methodology study is to devise a means for relating data from several science and design fields. The project is testing several simulation models and linear programs and hopes to "wed" the best of these to the Symap computer graphics program as the data integration tool.

Subprojects are expected to develop data from six principal water and related land planning problem areas. These include: (1) investigation of recreation potentials and landscape design problems; (2) aquatic productivity in relation to water quality; (3) an industrial survey to determine the characteristics of industries with respect to water use; (4) input-output economic analysis in the watershed; (5) bio-energetics research in relation to wildlife habitat and forest management; (6) statistical integration and computer program development.

Etiology of Maple Decline (Ecological Relationships)

Donald L. Mader and Joseph C. Mawson

Studies of sugar maple stands in respect to the relationships between soil conditions and decline symptoms, as well as growth, indicate several important effects. Application of nitrogen fertilizer to declined trees resulted in a great improvement in leaf color and much higher foliar nitrogen levels. Low foliar nitrogen was significantly associated with decline symptoms and growth rates. Tree size and age together with foliar nutrient levels accounted for much of the difference in growth of individual trees. Foliar nutrient levels for calcium and magnesium were closely related to soil contents.

The occurrence of declining individual sugar maples and their location with respect to topographic and cultural features of the immediate environment is being studied.

Forest Hydrology

Donald L. Mader

Studies of soil moisture regimes in relation to different forest and soil types continue. Previous results indicate less water use in spring by hardwood stands

as compared to conifers, because of the lack of foliage. Application of water balance computations to soil moisture prediction gave a high level of agreement for grass-covered areas but less satisfactory results for forest areas. Studies of the impact of reduced stand density on soil moisture regimes and potential run-off are underway.

Humus Accumulation in Hardwood Stands

A study of the characteristics of forest humus layers in various types of hardwood stands as they relate to watershed management. Parameters of interest include depth, weight, and organic matter content in relation to age, density, and site quality of the forest stands. Also of interest are the moisture storage capacity and drying rates of humus layers to provide insight on their role in the hydrologic cycle, particularly rainfall absorption potential.

Maple Root Initiation, Development and Geotropic Response

Brayton F. Wilson

Experiments suggest that initiation of lateral roots in seedlings is regulated by auxin and/or gibberellins produced by the leaves. Analysis of old, long roots shows that the small diameter root tips formed in seedlings can develop into large diameter tips that characterize the woody roots of the mature root system. Large tips may also arise *de novo* from the hypocotyl.

WILDLIFE BIOLOGY AND CONTROL OF BIRD POPULATIONS

Ecology and Behavior of the Beaver

Joseph S. Larson

Despite a wealth of literature on this species, few critical studies of behavior and the relationships between behavior, habitat and general survival have been made. Current emphasis is being placed on accurate techniques for determining the sex of the live beaver, establishment of a survivorship curve, social behavior of animals marked for visual and radio identification and general age-related aspects of beaver biology.

Evaluation of Age Criteria for Sika Deer

The Sika is a small species of elk introduced in several areas of the eastern U.S. It may have potential as a game species but its feeding behavior and nocturnal habits indicate it may be a pest among forest and agricultural crops. Eye lens weight, and dental development are being examined for use as criteria of age to provide a basis for population studies and control.

Utilization of Connecticut River Valley by Ducks

William G. Sheldon

A study of changes in duck habitat over 38 years in Connecticut River valley from aerial photographs.

Amalgamate Pheasant Study

Bernard C. Wentworth

An attempt will be made to breed a pheasant with better survival, feeding habits, reproductive proficiency and distribution traits that will facilitate their establishment in the submarginal land and pole-stage hardwoods niche.

FISHERIES BIOLOGY

The Early Life History of the American Shad

Charles F. Cole

To locate the American shad spawning sites in the Connecticut River above the Holyoke Dam, and to document the early life history of the shad in this area, by various sampling techniques on a 37-mile section of the Connecticut River above the Holyoke Dam. Two years of sampling have gone into this study and it is expected that the student involved will remain working on this project for his doctoral dissertation.

Seasonality of Estuarine Fish Eggs and Larvae

To evaluate the role played by a small estuary (the Weweantic) tributary to Buzzards Bay as a production and nursery ground for marine fishes. Ichthyoplankton and juvenile and adult fishes have been collected for the past four years as well as ecological parameters. Data are now being evaluated.

Biological Investigation of the Tomcod

The Atlantic tomcod (*Microgadus tomcod*) in the Weweantic River was sampled from December 1966 through November 1967. Factors controlling the spawning behavior and success in this species are being evaluated. Egga and larvae during the 1967 spawning season were poorly represented in the plankton samples from January through April 1967. Age and growth studies are being conducted on this species.

Comparative Growth Ecology of the White and Black Crappie

These two closely related species make somewhat different biological demands on the environment and their growth patterns are regulated by factors as yet not fully understood. Research was begun in 1966 to determine what factors regulate the size and success of populations of these two species found in the Northampton Oxbow.

Ecology of the American Smelt

The American smelt is an important component of the estuarine fish fauna in Massachusetts. A study is underway to investigate fecundity, age and growth, and the seasonal movements of larvae, juvenile, and adult American smelt within the Weweantic River estuary and the factors controlling its yearly success.

Sciaenid Comparative Osteology

Additional sciaenid specimens have been gathered during the last cruise on board the R/V EASTWARD during January 1968 from Miami to Charleston. This study is to gain insight into the taxonomic and biological relationships of the Sciaenidae, commercially important tropical and temperate water fishes.

Economic Impact of Marine Sport Fishery

James A. McCann

The objectives of this project are: to survey the developing Massachusetts marine sport fishery and establish statistical sampling methods; to identify the marine sport fisherman, his equipment, species preference, fishing areas, and catch per unit of effort; and to evaluate his impact on the economy of Massachusetts. An initial phase of the survey will determine the relative importance of the marine sport angler from each of the surrounding states on the economy of Massachusetts.

Survey of Massachusetts Ponds and Lakes Over Five Acres in Size

The ponds and lakes on Massachusetts support a heavy recreation and utilitarian use. Numerous authors have indicated that these uses can be expected to increase in the future. Although there has been considerable work done on these ponds, it is both fragmentary and scattered. The objectives of this study will be: to summarize existing data and to locate, identify, and categorize each of the ponds and lakes in Massachusetts of over five acres as to their physical, chemical, and biological features, and to determine their present and potential uses.

Density, Feeding Habits, Age and Growth of Trout

Brook and brown trout specimens obtained from a rotenone sampling of the West Branch, Swift River have been analyzed for age and growth, density and stomach content data. Some difficulty was experienced in discerning the difference between "hatchery" and "wild" trout scales. A manuscript is being prepared dealing with these data.

Consumer Analysis of Forest Recreational Activities

Robert E. Bond

This is a completed study of the socio-economic characteristics of hunters and fishermen in the New England Region. A few of the findings are: the degree of education had no effect upon the extent of participation in hunting and fishing; professional technical and managerial occupations comprised 24% of all licensed hunters and fishermen; and about 65% of licensed sportsmen had incomes of from $3000 to $8999. Prohibition of Sunday hunting appreciably reduces participation; deer and game birds are most hunted; and trout, bass, pickerel and pike are most hunted fish in descending order of importance. Participation in hunting and fishing is associated with experience in childhood, and thus is a predictor of future population participation.

Food and Shelter Requirements of Ruffed Grouse in Relation to Energy Regimes

Robert B. Brander

Five ruffed grouse equipped with miniature radio transmitters were tracked. Findings clearly indicate that aspens are integral food items in the winter diet of grouse, and that white pine and hemlock stands of certain density are primary night roosts. Preliminary study indicates that aspens offer an optimal energy source, and that pine and hemlock present optimal barriers to energy leakage from roosting ruffed grouse.

Control of Bird Depredation

Frederick Greeley

A basic life-history and population study of Baltimore orioles was continued through 1967. Forty-nine adults were banded in mid-May. Cold, wet weather disrupted nest construction. Forty-six young fledged from 21 nests containing 83 eggs. Again, marked fledglings disappeared and could not be traced in July and August. A literature survey of avian visual perception as it relates to food selection was completed and analyzed. The conclusion is that stimuli which would alter perception in such a way as to be repellent do exist, but considerable basic research on ocular function in birds is needed.

Perpendicular-to-Grain Behavior of Wood Due to Moisture Increase

R. Bruce Hoadley

Maximum conpression set of 9% tangentially has been found in American beech in wood wafers undergoing a moisture content cycle of 7% to saturation and return while under restrain. Up to 3% compression set occurred in yellow birch dowels undergoing a 7 to 18 to 7% cycle, to indicate how furniture may become loosened merely by exposure to fluctuations in humidity. Performance of wood-to-wood assemblies with the dowel glued into the restraining member indicates that the adhesive band apparently has a significant effect in reducing the amount of set development.

Recreational Resources of the Connecticut River

William P. MacConnell

Aerial photos of the Connecticut River taken in 1965 have been classified by land use type as a means of evaluating its recreational resources. Massachusetts, Connecticut, New Hampshire and Vermont have been classified with the types transferred to base maps. Each land use type has been measured and tabulated by town and county. An analysis of changes on the river in Massachusetts for the period 1952-1965 has been completed using similarly classified photos taken in 1952. Statistics for the other three states for this period should be available this summer. Because of its polluted state, not much change has occurred on the river from 1952-1965. Explosive changes are foreseen when the river becomes clean enough for broader recreational use.

Genetic and Environmental Adaptability of Forest Trees

Donald L. Mader and Joseph C. Mawson

Growth of white pine in relation to nutrition, soil and site characteristics is the current area of emphasis in this cooperative research. Field plots have been remeasured and mensurational field work completed. Data from tree measurements have been keypunched and sent to the U. S. Forest Service for analysis. Fifteen independent variables including basal area, site index and mean age of dominant and codominant trees were tested against two dependent variables--annual net and annual gross cubic foot growth. Results indicate that 45% of the variability can be accounted for in the two dependent variables.

DEPARTMENT OF LANDSCAPE ARCHITECTURE

Ervin H. Zube, Head

The graduate program has continued to grow and enrolled 40 students in the fall semester. This has resulted in a desired increase in research activity.

Identification and Value of Ornamental Crab Apples

Tom S. Hamilton, Jr.

Study of the feasibility and identifying ornamental crab apples by leaves and petiole sections and development of methodology for identification.

Suitability Trials of Some Selected Ornamentals

A study of the hardiness and suitability of experimental plants from the U.S.D.A. Plant Introduction Station, the National Arboretum and others.

Landscape Construction; Materials and Details

John Martin

Compilation, development and classification of construction materials and details data for publication.

Computer Graphics and Its Application to Resource Mapping and Regional Planning

Paul N. Procopio

Determination of the feasibility of using SYMP for resource mapping and planning to produce print-outs showing statistical data and spatial distribution.

Affects of Climatology on Environmental Form

John H. Spencer

Case studies on the affects of climatological factors on environmental form and development of guidelines for consideration by planners and designers.

Evaluation of the Community Recreation Schedule

Earle Whitney

An evaluation of the schedule utilizing the City of Northampton as a case study.

The Relationship of the Natural Resources of the U.S. Virgin Islands to Tourism and Recreation

Ervin H. Zube

Analysis of the resource base and the development of policies and guidelines for the allocation and management of resources in harmony and in support of the tourist-recreation economy.

Masters Degree Thesis or Terminal Projects
(Under the direction of the graduate faculty)

Potential Environmental Problems Related to Oil Shale Mining
Robert O. Brush, Advisor H. Davis

Investigation of potential air and water pollution, scenic disturbances and developmental problems attendant to the possible mining of the Green River Oil Shale deposits in Colorado.

A System for Landscape Inventory and Evaluation
Anneke Rietsema and James Minges, Advisor E. H. Zube

A method for inventorying and evaluating the visual landscape in relationship to a major interstate highway.

The Impact of a Jet Airport on Environmental Quality
Russell Richards, Advisor, T. Bacon

A case study of Bradley International Airport, its impact on changing land use patterns, noise pollution and the visual environment.

Pedestrian Circulation on College Campuses
John Crowe, Advisor, E. H. Zube

Study of desire lines, walkway capacities and design standards for campus planning.

Survey of the Need for Landscape Architectural Technicians
Walter Ashland, Advisor, H. Mosher

To identify the need for and the educational requirements for technicians to perform specified repetitive tasks in professional offices.

Survey of Public Acceptance of Various Professional Titles
Thomas Musiak, Advisor, R. H. Otto

A survey to attempt to ascertain public knowledge of various professional titles (architect, landscape architect, site planner, landscape nurseryman) and their respective competencies and responsibilities.

Small Community Visual Survey Technique
Michael Sweeney, Advisor, E. H. Zube

The development and testing of a technique for analyzing the visual environment of small communities for use by "interested lay groups".

An Open Space System for the City of Holyoke
Nicholaos Kantartzis, Advisor, J. Martin

The development of an open space system for the central area of Holyoke incorporating existing open spaces and public and quasi-public buildings.

DEPARTMENT OF PLANT PATHOLOGY

Richard A. Rohde, Head

Research Computer Center Grant

F. W. Holmes

Preliminary studies are in progress to convert records of laboratory studies other than for Dutch elm disease to keypunched IBM cards for computer sorting and arranging for tabular reports. Greater flexibility of the computer will permit special reports according to town for each host and pest, or according to host for each other factor, etc. Coding of a program to carry out this intention has begun, and all 1968 records, except Dutch elm disease, are being placed onto computer cards.

Pathology of Wilt Disease of Trees

Development of a resistant variety of the American Elm is being emphasized as a means of controlling Dutch elm disease. High tolerance rather than complete immunity is being sought; and only the most resistant elm seedlings grown from selected seed after neutron irradiation and two inoculations with Dutch elm disease are being retained for future cross-pollination. To date, 114 survivors of 3,170 elms first inoculated in 1965 have received a second inoculation and disease symptoms proved extremely light. About 4,000 elms from 1963 irradiated seed had their first inoculation from the same culture and symptoms were extremely heavy. This sharp difference in the degree of symptoms of the two indicate that the program is effective in setting aside a pool of germ plasm for resistance from which future crosses can be made to combine any different resistances.

Phenolic Compounds Associated With Injury Caused By Plant Parasitic Nematodes

R. A. Rohde

Plant injury is characterized by accumulation of phenolic compounds in the injured areas. Attempts are being made by histochemical and conventional analytical methods to characterize these compounds and locate their site of activity. Biological activity of compounds formed in diseased tissue is being studied in relation to their contribution to disease symptoms and, in resistant hosts, their activity against the pathogen.

Physiology and Biochemistry of Nematode and Nematode-Host Relationship

Plant parasitic nematode species normally found in the soil respire faster in carbon dioxide concentrations of 1-2% whereas a foliar species respire faster in the carbon dioxide level of airs, indicating an adaption to environment. Similar adaptions were found for asmotic pressure, temperature and humidity. Cabbage varieties resistant to Fusaruim wilt were more reactive to invasion by lesion nematodes than were susceptible varieties. in the fermation of phenolic compounds. Detailed anatomical studies and observation of symptoms were made for the first time on this disease complex. Histochemical and electron microscope studies on root-knot induced giant cells.

Indexing and Transmission of Pome Fruit Viruses

G. N. Agrios

Transmission experiments with known and with suspected apple and pear viruses are being carried out in the orchard, nursery and greenhouse. Three apple viruses have been transmitted mechanically to *Chenopodium quinoa* from apple trees infected with Apple Mosaic, Russet Ring, or Flat Limb Virus. This is the first mechanical transmission of Russet Ring and Flat Limb Viruses. Certain biological and physical properties of these viruses are now being studied.

The effects of several pome fruit viruses on the indicator host *Prunus tomentosa* are studied by single and mixed inoculations to determine relationships among the various viruses including possible synergism or antagonism between them. The value of *P. tomentosa* as a differential host for some of the viruses is being evaluated.

Effect of Viruses on the Chemical Constituents of Pome Fruits

Biochemical studies are being made to determine the presence and relative concentrations of various carbohydrates and organic acids in Apple Mosaic virus- and Russet Ring virus-infected apples in comparison with virus-free apples. Determinations are being made during various stages of apple growth in the orchard and also following various periods of storage. Preliminary results with the major carbohydrates indicate only minor differences in their concentration in healthy and in virus-infected apples.

Viruses and Virus Diseases of Forest Hardwoods

Indexing experiments are underway for several virus-like conditions observed on trees of some forest species, namely ash, maple, and yellow birch. Observations of trees in the forest for detection of viruses and transmission experiments to determine their presence are being continued. In addition, ten apple, pear or other viruses have been introduced singly into seedlings of six different forest species in order to determine the transmission to and effects of these viruses on the forest trees.

Helminthosporium Blister Canker of Pear

Studies on the histopathology of this disease have been continued and the fungus has been induced to sporulate by modifications in the nutrient medium and lighting conditions. The taxonomic relationship of the *Helminthosporium populosum* causing blister canker on pear, the one causing apple pox and one isolated from oak are being investigated by cross-inoculation experiments. The screening of fungicides effective against the pathogen is being continued in the laboratory.

Needle Cast Disease and Ozone Damage to White Pine

Walter M. Banfield

White pines showing profuse spotting of needles and chlorosis of foliage produced flawless new foliage when grown in a greenhouse into which air was admitted through cotton and charcoal filters. Exposure of susceptible healthy plants to ozone concentrations exceeding 18pphm induced profuse spotting and some blight. Plants exposed to outside air for a week or more and then returned to the filtered greenhouse developed spotting. Needle spot symptoms on some of the ozone exposed trees were indistinguishable from those induced by Lophodermium pinastri exposure.

DEPARTMENT OF PLANT AND SOIL SCIENCES

F. W. Southwick, Head

The research productivity of the department continues to be highly satisfactory. A total of 18 research papers were published during the year, plus receipt of a five-year $250,000 grant and renewal of four others. Thirty graduate students were engaged in research.

Pesticide Adsorption and Movement in Soils

John H. Baker

The adsorption of atrazine, a herbicide, and diazinon, an insecticide by soils and the movement of atrazine in soils is being studied. Adsorption of both pesticides by soils from Massachusetts has been found to be related to the soil organic matter content. Movement of atrazine in soil columns is more rapid than would be predicted on a basis of chromatographic theory and amounts of atrazine adsorbed by the soil in equilibrium with atrazine solutions. Reasons for the deviations from theory are being evaluated.

Ammonium Interactions with Proteins

Allan V. Barker

The interaction of NH_4^+ and protein is thought to be a possible mechanism for ammonium toxicity in plants. Hydrogen-bonding of ammonium ions to bovine serum albumin and bovine and equine alpha-globulins was detected. Ammonium ions caused perturbations of the NH stretching mode of films of proteins cast from solutions of NH_4Cl. Mixing of KCl with NH_4Cl reduced the perturbation.

The interaction of NH_4^+ with alpha-globulins caused the proteins to lose stability to heating. The specific viscosity of solutions of bovine serum albumin was decreased by NH_4Cl of KCl but was increased by other compounds and urea at high concentrations. The extent of tryptic digestion of bovine serum albumin was decreased in NH_4Cl solutions but increased in 6M urea solutions in comparison to distilled water.

Post-Harvest Physiology of Pomological Fruits

W. J. Bramlage

Findings show that severe watercore leads to internal breakdown in apples by reducing O_2 uptake by tissues leading to a build-up of ethanol, acetaldehyde, and ethyl acetate, which induce breakdown. Comparison of ripening patterns show that McIntosh apples ripen uniformly and increase little in membrane permeability. Delicious appear to ripen sooner in the core than in the cortex, and to increase in membrane permeability. These differences may be related to their different susceptibilities to watercore.

Two consecutive annual treatments of Alar to McIntosh trees significantly reduced the rate of flesh softening and preharvest drop, but little effect was noted otherwise. After cold or CA storage, flesh firmness differences between control and Alar-treated fruit were much less than at harvest. Alar

was more effective in reducing scald on CA than on cold-stored Cortlands. Alar had little influence on development of brown core, internal breakdown or decay of stored McIntosh, and occasionally increased the scald susceptibility of cold-stored McIntosh.

Soluble Carbohydrate Reserves

William G. Colby

Seasonal changes in the levels of soluble carbohydrate reserves are being studied in Kentucky bluegrass, red fescue, and three bentgrasses, as well as some factors which influence these levels, such as nitrogen fertilization, height of cut, strains, and weather conditions.

Plant and Soil Relationships

Mack Drake and Cecil L. Thomson

Influence of soil temperature on sweet corn growth in early spring. Soil interception and storage of solar energy as modified by soil slope, planting bed orientation and transparent film are being used to increase growth of sweet corn in early spring.

Temperature Effect on the Morphology of the Lily

George B. Goddard

Morphological studies on vegetative versus flowering of *Lilium longiflorum* and conditions influencing both phases of growth. Research has been conducted on these plants using a variety of temperature treatments after storage of the bulbs to determine the degree of devernalization obtained. Preliminary results indicate that bulbs started at 70° F, initiate flower buds much later than those started at 40°, 50°, or 60° F after storage. Little difference in time of initiation has been noted in plants started at thelatter 3 temperatures.

Genetics and Breeding of Tomatoes

William H. Lachman

Two compounds homozygous genetic testers have been developed, ie., a_1 hl j_1 neg_1 and a_1 hl tab, with all mutants located on chromosome II. This will allow for testcross analysis and a more precise positioning of neg and tab on the chromosome.

Determination of Plant Available Boron

William A. Rosenau

Previous work has indicated that Massachusetts greenhouse soils carry 8-12% organic matter, considerably higher than values found in field soils. Research at Wisconsin has indicated that the hot water extraction of highly organic soils does not remove all the plant-available boron and that stronger extracting solutions must be used. Sunflowers grown in -B nutrient solution and using extracted greenhouse soils as the boron source supports this theory in soils carrying 10% O.M. Analysis of tissue to determine actual boron uptake and studies to determine increments of boron extracted by sequential hot water extractions are planned.

Culture of Pickling Cucumbers for Mechanical Harvesting

Cecil L. Thomson

Varieties, spacing and weed control were investigated to determine the cultural changes required when this crop is to be grown for once-over mechanical harvest.

Vegetative Covers for Roadsides and Dunes

John M. Zak and Joseph Troll

Work is focused on the selection of plant material which requires less maintainance and still produces good cover for roadsides under Massachusetts conditions. Studies to break seed dormancy in several species of plants which appear promising for highway cover are being carried out. Soil sterilants are being evaluated for controlling vegetation along guardrails. Carbohydrate reserves in beachgrass under various fertilizer treatments have been determined. Trees and shrubs have been planted on stabilized dunes as permanent cover to further study methods of planting to increase survival and growth. Plots have been developed to evaluate varieties of grasses and other plant materials under various levels of management to provide rapid stabilization of roadside slopes.

Physiology of Low Temperature Injury on Ornamental Plants

John R. Havis

Desiccation appears to be an important cause of winter injury to broadleaved evergreens, but artificial warming of soil in the root zone to increase the availability of moisture has failed to markedly reduce damage under field conditions. This was especially true in winters of high snowfall. Evidence indicates that winter-dormant broadleaved evergreens lose moisture at a significant rate while leaves are frozen and in darkness.

Plant and Nutritional Variables Associated With Ammonium Assimilation in Plants

Donald N. Maynard

The occurrence of tomato stem lesions under soil conditions of ammonium excess and insufficient potassium can be eliminated with higher potassium levels despite the presence of large quantities of ammonium. The potassium effect is twofold: its competition with ammonium results in reduced ammonium uptake, and toxic concentrations of ammonium or related compounds do not accumulate in the presence of adequate potassium. The effect of potassium on incorporation of ammonium into non-toxic compounds appears to be the principal factor in preventing ammonium toxicity. Stem lesions occur in the presence of ammonium on tomato, eggplant and potato, but not on petunia, tobacco or pepper.

Relationship of Nutrition to Plant Physiology Disorders

Differential response of various inbred lines to iron has been studied in corn. Some lines, eg. Oh 40B are very susceptible to chlorosis and will develop symptoms of iron deficiency even at very high levels of iron in the growth medium. Other inbreds, eg. Wf 9 do not develop iron deficiency symptoms except at very low levels. Total iron content of the tissue does not appear to be related to the external appearance of the plants. The

physiological basis for the expression of iron deficiency symptoms in corn is being investigated. Results from studies involving different iron sources indicate that genotype is an important factor in the effectiveness of an iron source in preventing chlorosis.

Effects of Growth Regulators on Plant Metabolism

Herbert V. Marsh

A previous finding that gibberellic acid (GA) promotes lignification in a dwarf variety of peas and also stimulates the activity of phenylalanine ammonia lyase, a key enzyme in phenol biosynthesis, is a basis for study on the effect, if any, GA has on phenol metabolism. Phenylalanine ammonia lyase has been partially purified from shoots of corn seedlings and compared biochemically to the enzyme induced in light-exposed slices of potato tubers. It is similar in size. It has been concluded that the enzyme is an allosteric protein subject to conformational changes which alter its activity. The possibility that one or more phenolic compounds are responsible for the variable kinetic properties of the corn enzyme suggests further study.

Relationships of Mineral Nutrition to Physiological Disorders

F. W. Southwick

Storage disorders of Delicious apples are not significantly affected by differential N and K fertilization. The incidence of fruit shriveling and storage scald of Golden Delicious after five months in 32° F storage was associated with high N fertilization.

The application of $Ca(NO_3)_2$ sprays to Cortland apple trees appears to reduce bitter pit of the fruit at harvest. Similar sprays applied to Baldwin apple trees were inconsistent in this respect. Injections of $Ca(NO_3)_2$ to apple branches did not appreciably increase leaf Ca when applied in late August and early September. Bitter pit is thought to be related to Ca nutrition, and Ca sprays are applied to correct the disorder.

Weed Life Cycles As Related to Weed Control

Jonas Vengris

Trials definitely indicate that sweet corn and snap beans are affected by purslane in the first 2-4 weeks of competition. After these crops were established, competition dropped almost to nil. Purslane seedlings emerged later, but did not affect yields. Seedlings which stayed longer than two weeks after beet emergence decreased yields significantly and proportionally during the time competition lasted. Purslane seedlings emerging after August 1 did not producemature seeds, and foliage production was less than 2% of plants emerging in May-June. Light intensity decreased by 25% was beneficial to growth and development of purslane, while a 76% decrease was detrimental. The presence of atrazine in the aerial portion of barnyard grass leaf seedlings treated for root absorption with the chemical was determined. The amount of atrazine accumulated in the plants depended on the concentration applied, and two degradation products were identified.

Morphological and Physiological
Responses of Perennial Forage Grasses

Mack Drake and W. G. Colby

Fructose as an index of carbohydrate reserve in tissue of orchardgrass was seriously depresses by fertilizer N. supplied in mid-April and May, but only slightly reduced when applied September 1. After initial depression to about 7%, fructose increased an average of 5% each week for six weeks, attaining a level of 35 to 40% by mid-October. Climate and photoperiod is critical for N induced reduction of carbohydrate reserves in orchardgrass. Higher levels of N are tolerated when the grass is vegetative and soil is cool and moist. Seasonal changes in timothy hay are similar to orchardgrass, but timothy cut during the period of rapid growth was severely injured at 90 and 150 lb N application, and moderately injured at 60 lb N when cut in early vegetative stage of growth. Low carbohydrate reserves restrict tiller formation resulting in little or no regrowth.

DEPARTMENT OF VETERINARY AND ANIMAL SCIENCES

Thomas W. Fox, Head

ANIMAL DISEASES

Avian Lymphomatosis

Martin Sevoian

Cellular preparations of tumor viruses have been associated with transplantation in this study of leukosis-causing agents and their control. Antibodies produced by inoculation of cell-free T virus have been shown to pass into chicken embryos and chicks via the yolk. Congenital antibodies from immunized dams are able to neutralize T virus in an *in vivio* environment, but not *in vitro*.

A survey of field flocks for incidence of Type II leukosis (Marek's disease) caused by the JM virus previously isolated, showed high levels of infection in flocks with no incidence of leukosis as well as flocks having a high incidence. These data help define the leukosis problem in the field.

Infectious Diseases Affecting Reproduction in Cattle

Russell M. Smith and Iona M. Reynolds

The effects of *Listeria monocytogenes* on the reproductive system has been demonstrated using sheep as a ruminant. Fetal death and/or abortion was produced in 7 of 9 experimentally infected ewes inoculated in the second half of gestation. LM was recovered from 11 of 13 fetuses on initial cultural attempts. Preliminar work with experimentally infected rams suggests that testis and/or epididymis may be infected during the bacteremic phase. Venereal transmission beyond this phase appears unlikely.

Salmonellosis of Poultry

Glenn H. Snoeyenbos

Work on the detection and control of Salmonella in poultry and poultry products shows that day-old chicks on litter rapidly transmitted infection to contacts. Infection approached 100% by the third week and then declined. Other findings: antibacterials known to be effective against salmonella failed to destroy salmonella in hatching eggs, contaminated feed infrequently produced flock infection, and infection in chickens appears most often to result from infected chicks or residual contamination of poultry houses. Field trials indicate that salmonella-free chicks can be derived from infected stock. Practical security management of chickens in confinement appears capable of preventing introduction of salmonellae, and litter culturing is probably the most practical method to detect infection. Increasing heat during feed pelleting appears necessary to adequately pasteurize contaminated feeds.

Respiratory Diseases of Poultry

Olga M. Olesiuk and Glenn Snoeyenbos

Chickens inoculated experimentally by the intranasal route at two months of age with *Mycoplasma gallisepticum*, F strain, were capable of transmitting the disease to susceptible birds 14 months later by direct contact exposure. The experimentally inoculated birds yielded *Mycoplasma gallisepticum* at 14 months post exposure that was capable of infecting inoculated birds and also manifested definite resistance to challenge inoculation with a virulent *Mycoplasma gallisepticum* strain. This evidence suggests that *Mycoplasma gallisepticum* inoculated birds may be true carriers and remain so for an extended period.

The new *Mycoplasma gallisepticum* control program handled 423,000 tests during the year. The eradication approach for the control of this disease has been accepted by additional segments of the industry.

ANIMAL GENETICS

Physiological Traits and Pleiotropic Genes in Fowl

J. Robert Smyth, Jr. and Thomas W. Fox

The interdisciplinary study of lymphomatosis is study concentrated on genetic resistance to disease, particularly Marek's disease (Type II, leukosis). Three 8-week trials were conducted using JM virus injections on chicks one day old. Significant differences were found among lines, sire families, and between sexes. Different genetic combinations differed in specific tissue susceptibility to neoplastic transformation. Hybrid combinations generally showed increased susceptibility. A significant maternal effect was associated with one breed. This has important implications in the design of commercial testing and breeding programs for resistance to Marek's disease. A major plumage color gene, E, was found to be associated with increased susceptibility to gonadal and total positive lesions.

Genetic and Environmental Factors Affecting Milk Composition

Stanley N. Gaunt and D. H. Hankinson

Analysis of 4253 lactation records of five breeds showed significant effects of herd,year, season, and age on yields and percentages of fat protein, solids-not-fat (SNF), and total solids (TS). Age factors were derived for each yield trait. The results suggest two sets of factors, one for milk yield and one for constituent yields. The expected breeding values of sires showed large genetic differences. An index is needed in a selection program to secure the optimun yield of milk with the desired composition.

No significant relationship between milk production and transferrin blood types was found on sires used in these and other herds. However, an analysis of the fertility among these transferrin genotypes showed significant differences.

ANIMAL NUTRITION

Endocrine Nutritional and Environmental Interactions in Fowl

Donald L. Anderson

Nutrition and endocrinology are so interrelated in the calcium metabolism of avian species that they cannot be considered separately with any degree of understanding. The use of bovine parathyroid extract (PTE) to alter plasma Ca and plasma acid (AcPase) and alkaline phosphatase (A Pase) activity (parameters of Ca homeostasis) demonstrates time, sex, age and dose dependent responses. This work provides information needed to explain conflicting data relative to PTE responses in chickens.

Calcium deficiency also has been used to stimulate increased avian parathyroid hormone secretion. This resulted in significant changes in gland size and AcPas and A Pase activity. The formation of parathyroid cysts on these glands, never reported in avian species so far as known, also was noted. This may help explai the sustained adaptation to Ca uptakes previously reported. Other studies demor strated for the first time the presence of a hypocalcemic factor in birds--apparently derived from thyroid tissue. Knowledge of the presence of this facto and studies of its function in relation to the parathyroid hormone in fowl is invaluable in understanding Ca homeostasis under normal and abnormal nutritional and environmental conditions.

ANIMAL PHYSIOLOGY

Endocrine Factors Affecting Reproductions in the Bovine Female

Donald L. Black, Joseph W. McDaniel and Gustavus Currie

The relationship between the uterus and corpus luteum has been studied in the hamster. A luteolytic substance which inhibits corpus luteum function in the ha ster has been isolated from the bovine uterus. The effect of drugs which act pr marily on the adrenergic nervous system on ovulation has been studied in rabbits

and cows. Drugs which stimulate the alpha component of the adrenergic nervous system block ovulation while those that act on the beta component do not.

Sheep oviduct fluid composition has been determined. Estrogen increases while progesterone decreases the secretory rate of the oviduct. With progesterone administration there is an increase in magnesium and total nitrogen and a drop in chloride. Administration of Atropine decreases the chloride and potassium content of oviduct fluid. Pilocarpine results in a decrease in sodium.

Avian Thyroid Physiology

William J. Mellen

Results of 11 experiments on avian $I-^{131}$ conversion ratio (CR) as a reliable method of evaluating thyroid physiology indicate that the CR technique can be useful in such studies, but that heretofore unsuspected sources of variation must be considered.

Important sources of variation in CR with chickens and turkeys are genotype, sex, age, time elapsed between $I-^{131}$ injection and drawing of blood, and interactions among the foregoing. Limited data indicate that the CR in Japanese quail is lower than that in chickens, while data on Pekin ducklings show that the CR reaches a maximum at least as high as that in the chicken. The avian CR appears to reach a plateau by 48 to 72 hours following $I-^{131}$ injection. In chickens, the maximum mean value is usually no greater than 75-80%, and in many cases is less.

4-H AND YOUTH PROGRAMS

Computer Research Projects

William W. Metcalfe

Investigation is underway of the educational impact of out-of-school television programming as an aid in teaching science to elementary and junior high school young people.

A second study is concerned with the feasibility of computerized membership operations for professional organization, Adult Education Association in Massachusetts. Both projects are being conducted in cooperation with the University Research Computer Center.

FEED AND FERTILIZER LAWS, SEED LABORATORY

Continued research on pesticide residues, especially by gas chromatography, resulted in the participation of four advanced degree candidates. Two M.S. and two Ph. D. candidates did the chemical phase of their research projects in the laboratories. One M.S. candidate did a great deal of his work in the Seed Laboratory.

COLLEGE OF AGRICULTURE

COOPERATIVE PROGRAMS CONDUCTED WITH OTHER SCHOOLS AND COLLEGES WITHIN AND WITHOUT THE UNIVERSITY

DEPARTMENT OF AGRICULTURAL AND FOOD ECONOMICS

With Universities of Vermont, Cornell, Rutgers and Pennsylvania State--Capital Budgeting training school. With Department of Civil Engineering--instruction in water control economics for sanitary engineers.

DEPARTMENT OF AGRICULTURAL ENGINEERING

With Rhode Island University--New England Marine Resources Information Program. With Extension Services of five New England state universities--Apple Harvesting and Storage Symposium. With Department of Agricultural Engineering, University of Connecticut--Dairy Housing Seminar.

CRANBERRY STATION

With University of Warsaw, Poland--student completing requirements for Ph. D. degree to be awarded in Poland.

DEPARTMENT OF ENTOMOLOGY

With Department of Biochemistry--provide training for graduate students desiring to work competently in biochemical research with insects.

DEPARTMENT OF ENVIRONMENTAL SCIENCES

With Harvard University--biology lectures on Plants and Human Affairs. With University of North Carolina--continued growth of experimental corn in support of research on origin and evolution of corn. With universities in the U.S. and Canada--Second National Symposium of Acarology.

(Institute of Agricultural and Industrial Microbiology)

With Clark University and Water Resources Center--research on bacteria in Quabbin Reservoir. With School of Engineering, Water Resources Center and Department of Biology at Clark University--research on aging process in lakes. With College of Arts and Sciences, School of Engineering and School of Education--summer institute on water pollution for high school teachers.

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

With Rensselaer Polytechnic Institute--development of color standards and methods for absolute colorimetric techniques. With University of Maryland--research on relationship of texture and flavor in foods. With Rutgers University--research on flavor effects of 5'-ribonucleotides on processed foods. With Universities of Iowa, California and North Carolina--development of a computerized Extension Management Information Reporting System.

DEPARTMENT OF FORESTRY AND WILDLIFE MANAGEMENT

With Yale University--forestry research. With Caribbean Research Institute, College of the Virgin Islands--research in natural resources. With University of Maine--Dry Kiln Operator's clinic and short course. With Southern Illinois University--Kiln Drying workshop.

4-H AND YOUTH PROGRAMS

With School of Education and Boston University--graduate teaching courses and lectures in Adult Education. With School of Home Economics--part-time faculty for continuing education program. With Boston College, Boston University, Suffolk University, Northeastern University--career program education for 4-H members.

DEPARTMENT OF LANDSCAPE ARCHITECTURE

With Hampton Institute--continuing exchange program bringing together black and white students to work on collaborative environmental design problems.

DEPARTMENT OF PLANT AND SOIL SCIENCES

With Extension Services of five New England state universities--Apple Harvesting and Storage Symposium. With five New England state universities--New England Fruit Meeting concerned with production, harvesting, physiology and research on tree fruit. With Botany Department--development of a combined curriculum in plant physiology at the upper undergraduate and graduate levels. With Extension specialists in Northeastern Region universities--a course in plant nutrition.

DEPARTMENT OF VETERINARY AND ANIMAL SCIENCES

With Departments of Zoology and Biochemistry--participation in a N.I.H. Traineeship program in Mammalian Reproduction and support of graduate education and research in the Physiology of Reproduction. With other state university experiment stations in the Northeast Region--cooperation in five federal research projects.

COLLEGE OF AGRICULTURE

STATUTORY CONTROL PROGRAMS

PULLORUM DISEASE ERADICATION
Department of Veterinary and Animal Sciences

In the 1966-1967 testing season, 247 chicken, turkey, and pheasant flocks were tested, representing 501,213 samples. No pullorum or fowl typhoid infection was found among the commercial breeding flocks tested. Pullorum infection was found in four fancier flocks and one commercial egg flock which was tested. In addition, the diagnostic service found pullorum infection in one group of 15-day-old chicks. The infection has been eliminated in these flocks either by retesting or by depopulation.

Paratyphoid infection was detected in 8 chicken flocks and one turkey flock tested for pullorum disease. *Salmonella typhimurium* was isolated from 4 chicken flocks and *S. heidelburg* from the other four. From the turkey flock, both *S. anatum* and *S. newport* were recovered.

MASTITIS TESTING
Department of Veterinary and Animal Sciences

During the calendar year of 1967, 128,496 milk samples were tested for mastitis. This represents an increase of 21,855 samples over the 1966 total. During recent years an average of 67% of new herds were found to be positive on their initial test. In 1967 75 new herds were activated on the *Str. agalactiae* eradication program and 53 (or 71%) were found to be positive for this infection. Thirty-seven herds were declared free from *Str. agalactiae* infection.

A total of 176 periodic tests were made on herds that had been *Str. agalactiae*-free. Twelve herds were found to have become reinfected, the majority of them by the addition of infected purchased replacements.

Diagnostic tests, often requested by veterinarians and local health boards, were made on 54 herds involving 877 cows and 2953 samples.

Nocardia mastitis was found in 8 herds involving 13 cows. This represents the highest yearly incidence of Nocardia mastitis to be found by this laboratory.

SHADE TREE LABORATORIES

Research in the shade tree projects is conducted, in part, on a 10-acre shade tree experimental nursery plot on the University campus. These nursery studies are in the process of being transferred to land assigned at the Horticultural Research Center in Belchertown. Control activity of the Laboratories also include numerous biopsies of elms suspected of having Dutch Elm disease, and the handling of inquiries on more than 100 other kinds of trees. Other activities of the Shade Tree Laboratories are included in the "Research" section of this report under "Highlights" and "Research Projects." (Department of Plant Pathology.)

FEED AND FERTILIZER LAWS, SEED LABORATORY

The most significant work by the laboratories is the investigation of the quality of the feeds, fertilizers and seeds sold in the Commonwealth. These activities contribute to individual, community and state enjoyment of greener lawns, sports areas, parks and flower gardens along with increased farm yields. Since the advent of drugs in feeds and the current prevalent use of pesticides, the laboratories' part in determining that feeds do not have excessive amounts of drugs and pesticide residues serves not only to protect animal health, but human health as well from the possible hazards of these residues that might appear in human food. The laboratories cooperate with other departments within the College by providing analytical service for determining trace elements in fruit tree leaves, in making toxicological examinations and analyses in animal viscera in suspected poison cases, in soil testing and in analysing forage samples and other feeds. Staff members also participate in collaborative work on the development of new drug assay and other analytical methods sponsored by the Association of Official Analytical Chemists.

DAIRY LAWS

Staff duties include the calibration for accuracy of all apparatus and test bottles used by inspectors testing milk and cream when tests are used as a basis for selling these products. Certificates of competency in testing milk and cream are awarded to individuals who pass an examination given by the Experiment Station inspector or who pass a short course given by the Stockbridge School. A third function is the issuing of licenses for measuring, sampling and accepting raw bulk milk from a producer at a dairy farm to those who pass an examination given either by the Experiment Station inspector or by a member of the Food Science and Technology Department.

SHORT COURSES

A three-day short course for seed inspectors comprising 14 hours of instruction was conducted by the Seed Laboratory in January of 1968. The students are chief market investigators and market inspectors employed by the Division of Markets, Massachusetts Department of Agriculture.

Objective of the course is to provide participants an opportunity to update themselves on new responsibilities and practices in carrying out their official duties under the State Seed Act.

Course content included: requirements and prohibitions of the State Seed Act; the seed inspector's responsibility; the Seed Laboratory's role; and a Practical Session including reviews of noxious weed seed and crop, vegetable and flower seeds.

COLLEGE OF AGRICULTURE

DIAGNOSTIC LABORATORIES

The College provides veterinary diagnostic services at Waltham through the Department of Environmental Sciences and at Amherst through the Department of Veterinary and Animal Sciences. Most of the poultry diagnostic work is performed by the Department of Environmental Sciences at Waltham. Poultry and large animal diagnostic services, as well as control programs are conducted by the Department of Veterinary and Animal Sciences at Amherst. A separate report of the Diagnostic Laboratories presents the detailed diagnostic activities of both departments.

Summary

During the calendar year, January 1, 1967 through December 31, 1967, a total of 6963 avian and mammalian specimens in 1143 consignments was submitted for laboratory examination. Specimens submitted were as follows:

AVIAN	Amherst	Waltham
Chicken	1136	3401
Turkey	110	381
Pheasant	8	59
Duck	1	154
Miscellaneous (14 species)	37	214
MAMMALIAN		
Cattle	1135	
Sheep	54	
Swine	34	
Horses	85	
Miscellaneous (13 species)	79	32

Plant Disease Diagnosis

During 1967, 727 crop diseases and their causative agents were identified by the laboratory in the Department of Environmental Sciences. Of this total, 15% were non-parasitic diseases, the result of cultural mismanagement. Fungal and/or bacterial disease-causing agents were isolated and identified from 74% of submitted specimens.

The isolation and identification of genera of nematodes, a new function initiated in 1967, has resulted in increased demand for diagnosis in crop soils and plants. Ten genera of pathogenic nematodes were isolated from floral and vegetable crops.

COLLEGE OF AGRICULTURE

SPECIAL PROGRAMS

CENTER FOR INTERNATIONAL AGRICULTURAL STUDIES

Malawi, Africa

The Center established in October of 1967 manages, for the College of Agriculture, a contract with AID which began in 1963 and whose objective is to render technical advice and assistance to the Government of Malawi.

The establishment of an Agricultural Credit system and the training and supervision of credit supervisors and assistants continues, and the position of Credit Advisor will be phased out in November of 1968.

AID and the Government of Malawi recently completed construction of the Bunda College of Agriculture. The Center furnished a Professor of Agriculture at Bunda's parent institution, the University of Malawi, responsible for the integration of agricultural courses, relationships with the University and general academic planning. He also was in charge of the faculty at Bunda. This project was carried on for two years and the position phased out in May of this year.

Current lecturer positions in Animal Husbandry, Biology and Plant and Soil Chemistry at the Bunda College of Agriculture will be continued until 1970.

Training was given to nine Malawian students in the College's undergraduate program in Veterinary and Animal Science, in Plant and Soil Science and in Agricultural Economics. The first two graduated in June. One will be a junior lecturer in Animal Husbandry at Bunda College and the other will organize and run a soil survey in Malawi.

International Participants on Campus

A total of 65 participants for specialized training in agriculture and Extension work came this year from England, Tunisia, France, Uganda, Malawi, Togo, Dahomey, Upper Volta, Malagasy, Ivory Coast, and Pakistan. Their program included work with county agricultural agents, a two-week stay with farm families and on-campus training in management and supervision, Extension methods, and Program Planning.

Distinguished visitors from Malawi included President Banda; the Speaker of Parliament, Mr. Surtee; the Minister of Natural Resources, Mr. Kumtumanji; and the Ambassador to the U.S., Mr. Mseka.

Curricula in International Agricultural Studies

An undergraduate and a graduate curriculum in International Agricultural Studies approved this June becomes operative this Fall.

The objective of these curricula is to train students to play an effective role in programs to increase agricultural production and the welfare of farm

families in low income countries, or to work with international agribusiness and trade. Each student in the program must have the same basic technical training and competence in his chosen agricultural profession as students planning domestic careers. He must also be trained for work in intercultural situations.

Future Plans of the Center

To maintain the on-going program in Malawi at the Bunda College and to furnish, in July, a lecturer in Extension Methods and replace the lecturers in Chemistry and Biology.

To establish an International House for interested foreign and American Students; to establish a monthly series of Colloquia; to establish an "African Table" and to begin publishing papers and training manuals.

To investigate research projects in and for developing countries, to investigate the possibilities of an AID contract with another country or region, to investigate the possibility of becoming a training center for Peace Corps Volunteers and to explore possible sources of funding for the Center.

CIVIL DEFENSE TRAINING PROGRAM

An increasing number of leaders in business, industry and local government are cooperating in civil defense training essential for acceptance and growth of the program. Growth is further evidenced by increased inquiries for guidance and assistance. A total of 17 instruction courses and conferences were held as follows:

Shelter Management Instruction --4
Radiological Monitor Instructor --6
Radiological Defense Officer --2
Civil Defense Management --2
Emergency Operation Simulation --1
Conferences --2

The scope of work under the 1969 contract has been increased and provides for a total of 25 instruction courses and conferences for the completed staff of one coordinator and two instructors.

RURAL CIVIL DEFENSE

Emphasis in the regional program, encompassing 15 states, has been placed on guidance to Cooperative Extension Services in the rearrangement of the educational responsibilities they retain for emergency preparedness. On the state level, educational work was highlighted by a series of 12 one-hour television programs on emergency preparedness devoted to the problems of non-urban and agricultural interests in Massachusetts. Faculty members of the College participated.

Because of federal budget restrictions, state and regional rural civil defense are to be curtailed July 1, 1968.

A P P E N D I X

COLLEGE OF AGRICULTURE

FACULTY PUBLICATIONS

Department	Scientific and Technical Publications	Extension Publications	Books	Book Reviews
Agricultural and Food Economics	8	29	1	2
Agricultural Engineering	11	7	-	-
Cranberry Station	23	2	-	1
Entomology	5	20	-	-
Environmental Sciences	48	-	2	1
Feed, Fertilizer, Seed Laws	3	-	-	-
4-H and Youth Programs	-	3	-	-
Food Science and Technology	39	4	4	-
Forestry and Wildlife Management	30	6	2	3
Landscape Architecture	-	3	1	
Plant Pathology	13	1	-	-
Plant and Soil Sciences	18	17	-	-
Veterinary and Animal Sciences	39	27	-	-
Totals	237	119	10	7

College of Agriculture

FACULTY RESEARCH GRANTS
(Number and Value)

Department	National Science Foundation		National Institutes of Health		Other Federal Agencies		Industry and Foundations	
	No.	Face Value	No.	Face Value	No.	Face Value	No.	Face Value
Agricultural and Food Economics							1	$ 43,500.00
Agricultural Engineering					1	$ 12,000.00	1	3,000.00
Cranberry Station	1	$ 20,800.00					6	20,100.00
Entomology and Plant Pathology	1	11,600.00					2	1,385.00
Environmental Sciences	1	26,700.00	2	$ 131,509.00	4	98,468.00	8	30,318.00
Food Science and Technology			6	368,447.00	1	39,000.00	8	71,500.00
Forestry and Wildlife Management					15	311,300.00	1	5,000.00
Landscape Architecture					1	25,163.00		
Plant and Soil Sciences					1	250,000.00	6	15,466.00
Veterinary and Animal Sciences			4	123,920.00	3	111,350.00	7	38,500.00
TOTALS	3	$ 59,100.00	12	$ 623,876.00	26	$ 847,281.00	40	$ 228,769.00

GRAND TOTAL: 81 PROJECTS. $1,759,026.00 FACE VALUE.

COLLEGE OF AGRICULTURE

FACULTY AWARDS, CITATIONS AND PROFESSIONAL RECOGNITION

AGRICULTURAL AND FOOD ECONOMICS DEPARTMENT

Crossmon, Bradford D.
Lecturer, Summer School, 1967, University of Puerto Rico.

Foster, John H.
Lecturer, Agricultural Development Council Seminar on Farm Management, Honolulu, Hawaii, Jan. 1968.

Leed, Theodore W.
Elected president of National Food Distribution Research Society.

Russell, Sargent
Fulbright Lecturership, Ege University, Iamir, Turkey.

AGRICULTURAL ENGINEERING DEPARTMENT

Clayton, J. T.
Fellow, American Association for the Advancement of Science.

Pira, E. S.
Recipient, first Farm Electrification Award "for outstanding contributions to improved agricultural production and rural living."

Zahradnik, J. W.
Named Honorary Vice President, American Society of Agricultural Engineers to represent the Society at the 7th International Congress on Biological and Medical Engineering.

CRANBERRY STATION

Zuckerman, Bert M.
Participant, Symposium on Tropical Nematology, University of West Indies, Trinidad. Recognition from American Society of Nematologists for contributions to nematology.

ENTOMOLOGY DEPARTMENT

Peters, Michael T.
Elected to Phi Kappa Phi.

Shaw, Frank R.
Presented plaque by Essex County Beekeepers Association in recognition of assistance.

ENVIRONMENTAL SCIENCES DEPARTMENT

Galinat, Walton C.
Chosen by the National Academy of Sciences to receive Yugoslav Academician Alois Tavcar on visit to discuss research in cytogenetics.

Gunner, Haim B.
Participant, Second International Conference on Global Impact of applied microbiology, Addis, Ababa, Ethiopia, Nov. 1967.

Litsky, Warren
Consultant, Div. of Hospital and Medical Facilities, U.S. Pub. Health Serv.; and Fed. Water Pollu. Control Admin., Dept. of Interior.

Member, Task Group on Microbiology. Aspects of raw shucked oysters, Comm. on Microb. of Foods, Natl. Acad. Sc.-Natl. Res. Council.

Diplomate of Am. Intersociety, Acad. for Cert. of Sanitarians.

Consulting Editor, INDUSTRIAS LACTEAS.

Mueller, W. S.
Editorial board of "Journal of Milk and Food Tech.," of the Intern. Assoc. of Milk, Food and Envir. Sanitarians.

FOOD TECHNOLOGY DEPARTMENT

Buck, E. M.
Member, Society of the Sigma Xi.

Fagerson, I. S.
Invited to engage in advanced research studies (spring semester 1967-68) Purdue University.

Francis, F. J.
Scientific Lecturer, Institute of Food Technologists for 1967-68 and 1968-69 (third year).

Fellow, American Association for Advancement of Science.

Hayes, Kirby M.
Fulbright Lecturer, University of West Indies, St. Augustine, Trinidad.

Hultin, H. O.
Recipient, Institute of Food Technologists Award for Research.

Sawyer, F. M.
Appointed Scientific Lecturer, Institute of Food Technologists, 1968-69.

FORESTRY AND WILDLIFE MANAGEMENT DEPARTMENT

Gatslick, Harold B.
Presented "Service to Industry" award and plaque at the Northern Loggers Congress, April 1968.

Mader, Donald L.
Fellow, American Association for the Advancement of Science.

Sheldon, William G.
Presented John Pierce Memorial Award of Northeastern Section of Wildlife Society.

LANDSCAPE ARCHITECTURE DEPARTMENT

Davis, Hugh C.
Consultant, President's Citizen Advisory Committee on Recreation and National Beauty.

Fabos, Julius Gy
Visiting critic and lecturer, Department of Landscape Architecture, Ohio State University.

Zube, Ervin H.
Visiting critic, Department of Landscape Architecture, Rhode Island School of Design.

Visiting lecturer, John Hopkins University.

PLANT PATHOLOGY DEPARTMENT

Holmes, F. W. and Rohde, R. A.
Invited to present papers at the First International Congress of Plant Pathology in London, England, July 1968.

Rohde, R. A.
Presented Plant Pathology Colloquium and class lectures at Cornell University, April 1968.

PLANT AND SOIL SCIENCES DEPARTMENT

Anderson, James F.
Honorary State Farmer award, Future Farmers of America, March 1968.

Drake, M.
Consultant, American Farm Research Association.

Rosenau, William A.
Stockbridge School of Agriculture "Outstanding Teacher" award, 1967-68.

VETERINARY AND ANIMAL SCIENCES DEPARTMENT

Denison, J. W.
Member, Phi Kappa Phi.

Foley, R. C.
Distinguished Teacher Award, University of Massachusetts, 1967-68.

Gaunt, S. N.
Fulbright Award as a research scholar to Denmark, 1968-69.

Sevoian, M.
Diplomate,American College of Veterinary Microbiologists.

Smith, R. E.
Charter Diplomate, American College of Veterinary Microbiologists.

Invited to Royal College of Copenhagen, Denmark for study and consultation, Spring, 1968.

COLLEGE OF AGRICULTURE

FACULTY OFFICES AND COMMITTEE MEMBERSHIPS HELD IN PROFESSIONAL SOCIETIES

AGRICULTURAL AND FOOD ECONOMICS DEPARTMENT

Crossmon, Bradford D.
- Chairman, Subcommittee on Policy, Northeast Farm Management Committee

Engel, N. Eugene
- Chairman, New England Milk Price Forecast Committee
- Secretary, New England Federal Milk Orders Committee

Foster, John H.
- Chairman, Resolutions Committee and Natural Resources Subcommittee, New England Agricultural Economics Council
- Chairman, Urban Impact Subcommittee, Northeast Regional Resource Economics Committee

Fuller, Earl I.
- Northeast Farm Management Committee
- Chairman, Subcommittee on AAEA Professionalism

Leed, Theodore W.
- President, Food Distribution Research Society
- National Advisory Committee on Food Merchandising Education
- Director, Western Massachusetts Economic Education Council

Marion, Donald R.
- Northeast Extension Marketing Subcommittee

Wycoff, J. B.
- Vice President and Editor, Western Farm Economics Association
- Executive Committee, New England Agricultural Economics Council
- Northeast Public Policy Committee

AGRICULTURAL ENGINEERING DEPARTMENT

Clayton, J. T.
- Chairman, Position Paper Subcommittee, ASAE
- Bioengineering Committee, ASAE
- Animal Shelter Ventilation Committee, ASAE
- Executive Committee, Connecticut Valley Chapter, ASAE
- Chairman, Research Committee, and member Executive Committee, New England Farm Electrification Institute

Fitzgerald, G. A.
- Study and Organization Committee for Frozen Food Division, Institute of Food Technologists

Fletcher, S. W.
- Chairman - Elect, and member Executive Committee, Connecticut Valley Chapter, ASAE
- Chairman, Food Engineering Division Technical Committee, ASAE
- Vice-Chairman, Food Engineering Division Education Committee, ASAE
- Food Engineering Division Steering Committee, ASAE
- Vice-Chairman and Executive Committee, U-Mass Chapter Phi Tau Sigma

Johnson, C. A.
- Milk Handling Equipment Committee and
- Agricultural Sanitation and Waste Management Committee, ASAE

Johnson, E. A.
- Instrumentation Committee, ASAE

Light, R. G.
- Councilor to Engineering Societies of New England, Connecticut Valley Chapter, ASAE
- Trustee, Engineering Societies of New England
- Water Treatment and Use Committee, ASAE

Pira, E. S.
- Nominating Committee, Connecticut Valley Chapter, ASAE

Whitney, L. F.
- American Society of Agricultural Engineers
  - Secretary-Treasurer, North Atlantic Region
  - Steering Committee, Power and Machinery Division
  - Forest Engineering Committee
    - Chairman, Reforestation Subcommittee
  - Fruit and Vegetable Handling Committee
  - Subsurface and Irrigation Committee

Zahradnick, J. W.
- Vice Chairman, Food Engineering Division, ASAE
- Vice Chairman, Steering Committee, Food Engineering Division, ASAE
- Chairman, Program Committee, Food Engineering Division, ASAE
- Public Relations and Intersociety Liason Committee, Food Engineering Division, ASAE
- New England Marine Resources Information Program

CRANBERRY STATION

Robert E. Devlin
- Chairman, NE-55 Technical Committee

John S. Norton
- Chairman, NE-44 Technical Committee

Bert M. Zuckerman
- Translator and Exchange Committee, Amer. Soc. of Nematologists

ENTOMOLOGY DEPARTMENT

W. B. Becker
- Eastern Committee on Insect Pests of Shade Trees and Ornamental Plants, Entomological Society of America
- National Committee on Insect Pests of Shade Trees and Ornamental Plants, Ibid
- Vice-Chairman and Executive Committee, Northeastern Forest Pest Council.

Frank R. Shaw
- Advisory Committee, Northeastern Mosquito Control Association
- General Committee, Phi Chi Omega

Marion E. Smith
- Secretary, U-Mass Chapter, Sigma Xi

Peter C. Steve
- Program Chairman, 1968 Meeting,Entomological Society of America, Eastern Branch

ENVIRONMENTAL SCIENCES DEPARTMENT

William A. Feder
- TR-7 Agricultural Committee of Air Pollution Control Association

John A. Naegele
- Chairman, NE56 - Air Pollution Problems in the North East
- Chairman, Committee on Standard Tests for Resistance in Mites, Entomological Society of America

Haim B. Gunner
- Chairman, Technical Committee NE-53, Northeast Regional Committee on Biological Degradation of Agricultural Pesticides
- Vice-Chairman, Technical Committee NE-39 on Nitrogen Transformations in the Soil

Warren Litsky
- American Public Health Association
  - Committee on Microbial Contamination of Surfaces
  - Chairman, Committee of Esturine Pollution
  - Subcommittee for Standard Methods for the Analysis of Water and Wastewater
- Editorial Board of "Applied Microbiology", American Society for Microbiology
- Standard Task Committee on Biochemical Aspects of Watercraft Waste Disposal Devices, National Sanitation Foundation
- Planning Committee, 1st International Symposium on the Gulf of Mexico
- R. C. Cleverdon Award Committee of the Connecticut Valley Branch, American Society for Microbiology

Robert W. Walker
- Abstractor, American Oil Chemist's Society Journal

Walton C. Galinat
- Secretary, New England Botanical Club
- Editorial Board, "Economic Botany" (Society for Economic Botany)

FEED & FERTILIZER, SEED LABORATORY

J. W. Kuzmeski
Chairman, Collaborative Check Sample Committee, Association of American Feed Control Officials
Investigator, Non-Protein Nitrogen Products. Ibid
Investigator, Nitrogen Products, Association of American Fertilizer Control Officials
Fertilizer Tolerances Committee. Ibid

W. N. Rice
Chairman, Noxious Weed Seed Committee, Association of Seed Control Officials of Northeastern States
Chairman, Meeting Place Committee, Association of Official Seed Analysts

C. T. Smith
Associate Referee, Feed Microscopy, Association of Official Analytical Chemists
Methods Committee, Association of American Feed Microscopists

4-H AND YOUTH PROGRAMS

William W. Metcalfe
Executive Vice President and Chairman of Membership Committee, Adult Education Association in Massachusetts
Secretary, U-Mass Chapter Phi Delta Kappa
Nominations and Elections Committee, Adult Education Association of the U. S. A.
Editorial Committee, Epsilon Sigma Phi

FOOD SCIENCE AND TECHNOLOGY DEPARTMENT

E. M. Buck
Director (1967-69) New England Livestock Conservation, Inc.
President, U-Mass Chapter Phi Tau Sigma

F. M. Clydesdale
Secretary and member of Membership Committee, U-Mass Chapter Phi Tau Sigma

C. E. Eshbach
Massachusetts Food Service Educational Council
Research Committee, Council on Hotel, Restaurant and Institutional Education

W. B. Esselen
Committee on Food, Committee on Microbiology of Food,and Task Group on Microbiological Safety of Radio-sterilized Foods, National Researc Council Advisory Board on Military Personnel Supplies, National Academy of Sciences

D. A. Evans
Executive Committee, Massachusetts Dairy Technology Society

F. J. Francis

Committees on Nomination and Elections, Constitution and Bylaws, and Undergraduate Awards, Institute of Food Technologists
National Councilor and member of Undergraduate Awards Committee Northeast Section I. F. T.
Chairman, Round-Robin on Instrument Comparison, Inter-Society Color Council

K. M. Hayes

Vice-Chairman and Chairman-elect, Northeast Section, Institute of Food Technologists
Director, Research and Development Associates, U. S. Army Natick Labs.
Program Committee, I. F. T.
Councilor - Phi Tau Sigma
ASHRAE Technical Committee on Frozen Foods

H. O. Hultin

Chairman, Scholarship Committee, Northeast Section, Institute of Food Technologists
Food Chemistry Task Force, I. F. T.

W. M. Hunting

Chairman, Advisory Board, Greenfield Community College

R. E. Levin

Secretary-Treasurer, U-Mass Chapter Phi Tau Sigma

W. W. Nawar

Committee on "Communications", American Oil Chemists Society
Committee on "Reproduction of Abstracts", Division of Agric. & Food Chemistry, American Chemical Society

F. E. Potter

Board of Directors, New England Group, National Ice Cream Retailers Association

F. M. Sawyer

Committee on Quality Control of Food Products and Committee on Sensory Evaluation of Foods, Institute of Food Technologists
American Society Testing Materials Committee E-18 on Sensory Evaluation of Materials and Products
Advisory Committee ASHRAE Technical Committee 7.4 - Frozen Foods

C. R. Stumbo

Food Irradiation Advisory Committee, National Research Council
Advisory Board on Military Personnel Supplies, National Academy of Sciences

FORESTRY AND WILDLIFE MANAGEMENT DEPARTMENT

Abbott, Herschel G.

Vice Chairman, Chairman, New England Section, Society of American Foresters
Treasurer, Sigma Xi, Massachusetts Chapter
Executive Council Representative, Xi Sigma Pi, Psi Chapter

Bond, Robert S.
Executive Committee, Society of American Foresters

Brander, Robert B.
Resolutions Committee, N. E. Section, Wildlife Society
Techniques Publication, Wildlife Society
Participant, Northeast Region Conference on Undergraduate Training

Carlozzi, Carl A.
Commissioner's Recreation Advisory Committee, Massachusetts Department of Natural Resources
Executive Secretary, Caribbean Conservation Association

Cole, Charles F.
Organizing Committee, Southern New England Chapter of American Fisheries Society

Gatslick, Harold B.
Educational Chairman, New England Building Codes Assoc. Inc.
Treasurer, New England Kiln Drying Association
Secretary, Treatments and Coatings Committee, Wood Drying Committee, Forest Products Research Society
Wood Committee, Building Research Institute, National Academy of Sciences and National Research Council
Visiting Scientist Lecturer, Society of Wood Science and Technology

Greeley, Frederick
Chairman and Executive Committee, Northeast Section, Wildlife Society

Hoadley, R. Bruce
Treasurer, Massachusetts Chapter, Society of the Sigma Xi
Treasurer, Northeast Section, Forest Products Research Society
Massachusetts Representative, Society of Wood Science and Technology

Larson, Joseph S.
Committee, 1967 Wildlife Publication Award, The Wildlife Society

MacConnell, William P.
Chairman, Program Committee, Summer Meeting 1968, N. E. Section, Society of American Foresters

McCann, James A.
Chairman, Nominating Committee, Northeast Division of the American Fisheries Society
Advisor, Technical Committee, Fishery Management of the Connecticut River Basin
Subcommittees, (1) Behavioral Study of Migrating Fish Species and (2) Effects of the Proposed Northfield Pump Storage Electrical Plant on the Ecology of the Connecticut River Ibid
Statistical Consultant, Hudson River Fisheries Investigation Committee
Statistical Consultant, Massachusetts Division of Marine Fisheries and the Massachusetts Division of Fisheries and Game

Noyes, John H.
Committee on International Relations, Society of American Foresters
Chairman, Steering Committee, 50th Anniversary Meeting, New England Section, Society of American Foresters

Massachusetts Interagency Advisory Council
State Rural Fire Defense
Director, Massachusetts Christmas Tree Association
Director, Massachusetts Wood Producers' Association

Reed, Roger J.
Advisor, Connecticut River Technical Committee

Rhodes, Arnold D.
Alumni Council, Yale School of Forestry
Chairman, Advisory Council to Northeastern Forest Experiment Station, U. S. Forest Service
Chairman, Northeast Region, Association of State College and University Forestry Research Organizations
Massachusetts Board of Natural Resources
Massachusetts Advisory Committee on Conservation Education

Rice, William W.
Executive Secretary, New England Kiln Drying Association
Secretary, Drying Division, Forest Products Research Society
Chairman, Drying Division NewsDigest Committee, Ibid
Member, Nominating Committee, Society of Wood Science and Technology
Drying Editor, Woodworking Digest

Sheldon, William G.
Director, Association of Massachusetts Town Conservation Commissions

LANDSCAPE ARCHITECTURE DEPARTMENT

Theodore S. Bacon, Jr.
Vice President, New England Chapter of the American Institute of Planners

Gordon S. King
Chairman, Educational Committee, Massachusetts Tree Wardens & Foresters Association
Steering Committee, Ibid
Shade Tree Selection & Evaluation Committee, International Shade Tree Conference
Educational Committee, American Park and Recreation Association

Earle D. Whitney
National Committee on Determination of Society Goals, Society of Park and Recreation Educators
Exchange Programs Committee, Ibid
National Committee on Recruitmant, National Recreation and Park Association

Ervin H. Zube
Executive Committee, Boston Society of Landscape Architects
Chairman, Career Guidance Committee, American Society of Landscape Architects
Conservation Committee, Ibid
Education Committee, Inter-professional Commission on Environmental Design

PLANT PATHOLOGY DEPARTMENT

F. W. Holmes
Chairman, Committee on Regulatory Work and Foreign Plant Diseases, American Phytopathological Society
Convener, Committee on Phytopathological Translations, Ibid

M. A. McKenzie
Executive Committee, Northeastern Forest Pest Council
Secretary, Committee on 23rd Annual Conference on Dutch Elm Disease, Massachusetts Forest and Park Association
Advisory Council, TREES "The Journal of American Arboriculture"
Consultant, Executive Committee, Massachusetts Tree Wardens and Foresters Association
Committee for Study of Overhead Electric Transmission Lines Re Scenic Assets, Natural Beauty and Property Values, Department of Natural Resources

R. A. Rohde
Nematology Committee, American Phytopathological Society
Education Committee, Society of Nematologists

PLANT AND SOIL SCIENCES DEPARTMENT

Mack Drake
Consulting Editor, Soil Sciences
Consulting Editor, Agronomy Journal (Soils)

William J. Lord
Treasurer, Epsilon Sigma Phi

Donald N. Maynard
American Society for Horticultural Science:
Board of Directors
Awards Screening Committee
Resolutions Committee
Granting Agency Study Committee

VETERINARY AND ANIMAL SCIENCES

D. L. Anderson
Chairman, Membership Committee, U-Mass Chapter Phi Kappa Phi

B. E. Colby
Vice-President, Extension Livestock Committee, American Society of Animal Science
Chief, Sigma Chapter of Epsilon Sigma Phi

R. C. Foley
Chairman, Committee for National Scholarship Candidates, Massachusetts Chapter Phi Kappa Phi
Chairman, Nominating Committee, Sigma Xi

Thomas W. Fox
Chairman, Special Awards Committee, Poultry Science Association

Stanley N. Gaunt
Chairman, National Mambership Committee, American Dairy Science Association

Robert M. Grover
Treasurer, Massachusetts Federation of Extension Workers

W. K. Harris
Chairman, Committee on Laboratory Procedures, Northeast Mastitis Conference

W. J. Mellen
President, U-Mass Chapter of Phi Kappa Phi

Martin Sevoian
National Leukosis Committee
American Veterinary Medical Association
Advisory Committee to Secretary of Agriculture, U. S. D. A.

Russell E. Smith
Elected Charter Diplomate, American College of Veterinary Microbiologists
Chairman, Section on Pathogenesis, National Leptospirosis Conference

C. Smyser
Antigen Committee, Northeast Conference on Avian Diseases

G. H. Snoeyenbos
Secretary-Treasurer, American Association of Avian Pathologists
Business Manager of "Avian Diseases" and Constitution and By-Laws Committee, Ibid
Advisory Committee, Poultry Disease Research, USDA-ARS
Program Chairman, Poultry Section, American Veterinary Medical Association
Permanent Secretary, Northeast Conference on Avian Diseases
Chairman, Antigen Committee, Ibid

D. N. Stern
President, American Association of Extension Veterinarians
Secretary-Treasurer, Western Massachusetts Veterinary Medical Association
Massachusetts Veterinary Medical Association
Program Planning Committee
Committee on Communicable Disease
Education Committee

COLLEGE OF AGRICULTURE

PAPERS PRESENTED BY FACULTY AT PROFESSIONAL MEETINGS

AGRICULTURAL AND FOOD ECONOMICS DEPARTMENT

Bragg, John H., "Being a Director: A Comparison with Being a Farm Owner," The President's Conference, Springfield, April, 1968.

Foster, John H., "Textbooks for Teaching Farm Management to Students from Low Income Countries," Seminar on Problems of Teaching and Research in Farm Management, Honolulu, Hawaii, Jan., 1968.

Fuller, Earl I., "The Potential Contribution of Agriculture to the New England Economy," New England Agricultural Economics Council, Durham, N. H., June, 1968.

Wyckoff, J. B., with W.G. Donovan (New Zealand) and D.G. Keeley (Australia) "Potential Investment and Interactions Between Natural Resources and Human Development," International Conference of Agricultural Economists, Sydney, Australia, Aug., 1967.

_____, "Extension Education and Land Use Planning in Delaware," Northeast Public Affairs, Media, Penn., Oct., 1967.

_____, "Economics of Natural Resource Use," Massachusetts Association of Conservation Districts, Nov., 1967.

_____, "Future Role of the Extension Agents in Resource Development," New England Association of County Agricultural Extension Agents, Provincetown, Mass., April, 1968.

_____, "Reactor Comments on Community Resource Development," ECOP-CRD Conference, New Brunswick, N. J., May, 1968.

_____, "Place of New England Regional Commission in Economic Development," New England Agricultural Economics Council, Durham, N. H., June, 1968.

AGRICULTURAL ENGINEERING DEPARTMENT

Clayton, J. T., "Interdisciplinary Relationships: Agriculture and Natural Resources with the Engineering Sciences," American Association for the Advancement of Science, New York, Dec., 1967.

Singh, Gopal and J. T. Clayton, "Inherent Bond Between Expanded Polystyrene Core and Concrete Facings of a Structural Sandwich," North Atlantic Region, ASAE, Quebec, Canada, Aug., 1967.

Fitzgerald, G. A., "Overview of a Total Concept of Food Distribution," Food Distribution Research Society, Layfayette, Ind., Oct., 1967.

Fletcher, S. W., "Evaluating New Good Containers - An Engineering Approach," American Society of Agricultural Engineers, Detroit, Mich., Dec., 1967.

Johnson, C. A., J. W. Zahradnik, and J. W. Pasko, "Environmental Control Chambers for Oyster Propagation," Institute of Environmental Sciences, St. Louis, Mo., April & May, 1968.

_____, "Conversion of Heat and Mass Transfer Rates to Fit Specific Requirements," ASAE, Detroit, Mich., Dec., 1967.

_____, and J. W. Zahradnik, "Design and Evaluation of a CA (Controlled Atmosphere) Apple Storage with an External Gas Seal," ASAE, Logan Utah, June, 1968.

Light, R. G., "Management Engineering for Dairy Systems Development," North Atlantic Region, ASAE, Quebec, Canada, Aug., 1967.

Manson, J. E., R. J. Novak, and J. W. Zahradnik, "Analog Simulation of a Time-Shared Automatically Controlled C-A Apple Storage," ASAE, Detroit, Mich., Dec., 1967.

Teixeira, A. A., J. R. Dixon, J. W. Zahradnik, and G. E. Zinsmeister, "Computer Optimization of Nutrient Retention in Thermal Processing Subject to the Constraint of Bacterial Lethality," Institute of Food Technologists, Philadelphia, Pa., May, 1968.

Teixeira, A. A., J. R. Dixon, J. W. Zahradnik, and G. E. Zinsmeister, "Distribution of Survival Spore Concentration, and Temperature in Conduction-Heated Cylindrical Food Containers During Thermal Processing," Ibid.

CRANBERRY STATION

Devlin, Robert M., "Influence of Indole-3-Acetic Acid and Gibberellic Acid on the Uptake of Simazine by Agrostis alba L.," Northeastern Weed Control Conference, New York, Jan., 1967.

_____, "Influence of Gibberellic Acid on Parthenocarpic Fruit Set in Vaccinium Macrocarpon," American Society of Horticultural Science, Jan., 1967.

_____, "Chemical Inducement of Anthocyanin Formation in Vaccinium Macrocarpon," AIBS, Texas A & M University, Aug., 1967.

_____, "Effect of Dichlobenil on Anthocyanin Development in Vaccinium Macrocarpon," Northeastern Weed Control Conference, New York, Jan., 1968.

_____, "Chemical Inducement of Anthocyanin Formation in Vaccinium Macrocarpon," American Society of Horticultural Science, Texas A & M University, Aug., 1967.

ENTOMOLOGY DEPARTMENT

Becker, W. B., "Artificial Defoliation of Sugar Maples," Eastern Branch, Entomological Society of America, Oct., 1967.

_____, "Some Remarks on Tests with DDT and Methoxychlor Against Elm Bark Beetles in Massachusetts," Annual Tree Wardens', Arborists, and Utilities Conference, March, 1968.

Callahan, R. A., C. Yadava, and Frank R. Shaw, "Effects of Massive Oral Doses of Ronnel (R) in White Leghorn Chickens," Eastern Branch Entomological Society of America, Baltimore, Md.

Chevone, Boris I. (Graduate Student), "Growth Inhibitions of Aedes aegypti Larvae by Nile Blue Sulfate, Ibid.

Miller, M. C. (Graduate Student), "Observations on the Mating Behavior of Tetrasticus incertus," Entomological Society of Canada and Entomological Society of Ontario, Montreal.

ENVIRONMENTAL SCIENCES DEPARTMENT

Feder, William A., "Growing Plants in Polluted Air," Mass. Flower Growers Association, Jan., 1968.

_____, "Effects of Ozone on Pollen Germination in Tobacco," Northeastern Region, American Society for Horticultural Science, Jan., 1968.

Ford, H. W., "Development and Use of Citrus Rootstock Resistant to the Burrowing Nematode," International Citrus Symposium, March, 1968.

Naegele, J. A., "Biological Inputs in Resource Planning," American Society for Horticultural Science, Jan., 1968.

Galinat, W. C., "Plant Habit and the Adaptation of Corn," Society for Economic Botany, University of Miami, June, 1967.

_____, "The Inheritance and Evolutionary Significance of String-Cob Maize," Maize Genetic Conference, University of Illinois, March, 1968.

_____, and B. G. S. Rao, "The Cytogenetic Relationship of Corn and Tripsacum," Ibid.

Gunner, H. B., "Aspects of Microbiology," American Society for Microbiology, Detroit, Mich., May, 1968.

Litsky, Warren, "A Microbiologist Warns the Detergent Industry," Soap and Detergent Association, Shawnee, Penn., Sept., 1967.

_____ , and R. W. Walker, "Lipids of Cytophaga Hutchinsonii," American Society for Microbiology, Detroit, Mich., May, 1968.

_____, and D. A. Evans, "Thermal Inactivation Studies on Certain Pathogenic Organisms in Milk," Ibid.

_____, "Microbial Contamination Through Dust Particles," American Association for Contamination Control, Chicago, Ill., May, 1968.

McEnroe, William D., "Analysis of Polarized Light by the Two-Spotted Spider Mite," Entomological Society of America, Eastern Branch.

_____, "The Development of Resistance and Fitness in the Two-Spotted Spider Mite," Genetic Series, Brown University, visiting scholar.

_____, "Evolutionary Significance of Arrhenotoky: the Matherian Population," and "A Behavioral and Morphological Analysis of the Photoreceptors of the Two-Spotted Spider Mite," Symposium in Acarology.

FEED & FERTILIZER LAWS, SEED LABORATORY

Kuzmeski, J. W. et al, "Report of Collaborative Check Sample Committee," Association of American Feed Control Officials, 1968.

_____, "Chlortetracycline and Oxytetracycline in Feeds; Qualitative Identification," Association of Official Analytical Chemists, 1967.

FOOD SCIENCE AND TECHNOLOGY DEPARTMENT

Clydesdale, F. M., "The Measurement of Color," Institute of Food Technologists, Philadelphia, Pa., May, 1968.

Eshbach, C. E., "The Food Service Industry Market for Turkey and Turkey Products," Northeast Turkey Federation, Chicopee.

Evans, D. A., "Technical Aspects of 'Filled' and 'Imitation' Milks," Rhode Island Milk Sanitarians Conference, Providence, R.I., April, 1968.

Francis, F. J., "Colorimetry of Chocolate and Cocoa," Pennsylvania Confectioners Manufacturers Association, Lancaster, Pa.

_____, "Degradation of Pigments in Jams and Preserves," National Preservers Association, Washington, D.C.

_____, "Food Colorimetry," Hunterlab Workshop in Colorimetry, Bethesda, Md.

Buck, E. M., "Meat Quality," Boston University Seminar on Food Service Management.

Levin, R. E., "Detection and Identification of Fish Spoilage Bacteria," Atlantic Fisheries Technological Conference, 1967.

_____, "Inactivation and Reactivation of Xanthine Oxidase," Ibid.

Lundberg, D. E., "Food Service Management," Boston University Seminar on Food Service Management.

_____, "Maximizing You," New England Hospital Food Service Directors Annual Meeting, Boston.

_____, "Work Simplification in the Kitchen," National Nursing Home Management Association, New York.

_____, "Personnel Organization," New York State School Food Service Association, Rochester, N. Y.

Fagerson, I. S. and W. W. Nawar, "Thermal Degradation of Carbohydrates and Lipids," American Chemical Society, Chicago, Ill., Sept., 1967.

Dubravcic, M. F. and W. W. Nawar, "Radiolysis of Simple Triglycerides," and "Mode of Cleavage in Glyceride Fatty Acids," American Oil Chemists Society, Washington, D. C., March, 1968.

Nawar, W. W., J. R. Champagne and M. F. Dubravcic, "An Approach to a Radiation Test in Foods, Institute of Food Technologists (I.F.T.), Philadelphia, Pa., May, 1968.

Champagne, J. R. and W. W. Nawar, "The Volatile Components of Irradiated Beef and Pork Fats," Ibid.

Sawyer, F. M., "Flavor Potentiators," Eastern Experiment Station Collaborators' Conference, Philadelphia, Pa., Nov., 1967.

Southard, J. H., and H. O. Hultin, "Glycolytic Activity of Chicken Breast Muscle Mitochondria Hexokinase," I.F.T., Philadelphia, Pa., May, 1968.

Melnick, R. L. and H. O. Hultin, "Distribution of Lactate Dehydrogenase Between Particulate and Soluble Phases of Homogenized Trout Skeletal Muscle," Ibid.

Stumbo, C. R., "Thermal Process Calculations and Their Significance to Engineers," American Society of Agricultural Engineers, Detroit, Mich., Dec., 1967.

Wrisley, A. L. and D. P. Allan, "A Planning and Control System for Extension Administration," Federal Extension Service, Washington, D.C.,July, 1967.

Francis, F. J., "Color Pigment Content in Fruits and Vegetables," I.F.T., Philadelphia, Pa., May, 1968.

de la Mar, R., and F. J. Francis, "Carotenoid Pigments in Bleached Paprika," Ibid.

Starr, M. S. and F. J. Francis, "Effects of Ascorbic Acid and Oxygen on Degradation of Four Anthocyanins in Cranberry Juice," Ibid.

FORESTRY AND WILDLIFE MANAGEMENT DEPARTMENT

Abbott, Herschel G., "Machinery Requirements for Reforestation in Northeast U.S.," American Society of Agricultural Engineers, Saskatoon, Saskatchewan, June, 1967.

_____, "A Concept of Professionalism," School of Forest Resources, University of Maine.

Carlozzi, Carl A., "An Approach to Planning Regions in Relation to Urban Areas," Latinamerican Conference on the Conservation of Renewable Natural Resources, San Carlos de Bariloche, Argentina, March, 1968.

Cole, Charles F., "Pesticide Effects on Early Life Stages of the Winter Flounder in Massachusetts Estuaries," Cooperative Extension Service, Westboro, Dec., 1967.

_____, "Can Mortality Rates Be Determined for Estuarine Ichthyoplankton Populations," U.S. Fish and Wildlife Service, Charleston, S. C., June, 1968.

Frame, David W. (Graduate Student), "Seasonal Variation of Attached Biota Test Panels in the Cape Cod Canal," Northeastern American Fisheries Society, Bedford, N. H., Jan., 1968.

Hoadley, R. Bruce, "Perpendicular-to-grain Compression Set Induced by Restrained Swelling," Forest Products Research Society, Washington, D.C., June, 1968.

Lebida, Robert (Graduate Student), "Seasonality of Ichthyoplankton in the Weweantic River Estuary," U.S. Fisheries and Wildlife Symposium, Charleston, S.C., June, 1968.

Noyes, John H., "Introduction to Woodlot Management," Massachusetts Audubon Society.

_____, "Evaluation of Christmas Tree Grading Criteria," Penn. State Christmas Tree Growers Association.

_____, "Conservation Needs in Resource Management," Cape Cod Conservation Conference.

_____, "Forests in the Urban Environment," Massachusetts Association of Conservation Commissions.

Rice, William W., "Characteristics and Drying Techniques for White Pine," Northeast Forest Products Research Society, Lake Luzerne, N.Y., Oct., 1967.

_____, "Some Ideas for Practical Drying Research," New England Kiln Drying Association, Amherst, Nov., 1967.

_____, "Training, Research and Products," Massachusetts Wood Producers Association, Whately, Nov., 1967.

_____, "Kiln Dry Dimension Parts Instead of Boards," New England Kiln Drying Association, University of New Hampshire, Durham, April, 1968.

Smith, Roderick M. (Graduate Student), "A Three-year Study of the Causes of Mortality in Juvenile Winter Flounder from the Weweantic Estuary," Northeastern American Fisheries Society, Bedford, N.H., Jan., 1968.

_____, "Pesticidal Residues as Possible Factor in Larval Winter Flounder Mortality," U.S. Fish and Wildlife Symposium, Charleston, S.C., June, 1968.

Watson, Jay F. (Graduate Student), "The Early Life History of the American Shad in the Connecticut," Northeastern American Fisheries Society, Bedford, N. H., Jan., 1968.

Wentworth, B. C., "Sterility and Reproductive Inhibition of Japanese Quail Induced by Mestranol Ingestion," Poultry Science Association, Durham, N.H., 1967.

_____, and B. A. Goodman, "Sterility Induced in Japanese Quail by Aerosol Treatment of Eggs with Mestranol," Ibid.

LANDSCAPE ARCHITECTURE DEPARTMENT

Davis, Hugh C., "A Classification System for Scenic Roads," President's Citizen Advisory Committee on Recreation and Natural Beauty, Washington, D.C., Dec., 1967.

_____, "A Comprehensive Recreation Plan for a City," American Association for the Advancement of Science, New York, Dec., 1967.

_____, "Technological Change and Recreation Planning," National Short Course for Recreation Planning, University of Michigan, May, 1968.

Zube, Ervin H., "Visual Values in the Landscape," U.S. Army Corps of Engineers, North Atlantic Region, Boston, Sept., 1967.

_____, "Natural Resource Determinants for Environmental Design," Symposium, Rutgers University, Oct., 1967.

PLANT PATHOLOGY DEPARTMENT

Acedo, G.N. and G. N. Agrios, "Helminthosporium Blister Canker of Pear," Northeastern American Phytopathological Society, Cornell University, Nov., 1967.

Acedo, J.R. and R. A. Rohde, "Lesion Nematode Injury to Cabbage," American Phytopathological Society and Society of Nematologists, Washington, Aug., 1967.

Agrios, G. N., "Net-Like and Ring-Like Cracking of Pear Fruit," American Phytopathological Society, Washington, D.C., Aug., 1967.

_____, "Virus Diseases of Shade Trees," Tree Wardens, Arborists, and Utilities Conference, Amherst, March, 1968.

Holmes, F. W., "Research on Elm Trees Resistant to Dutch Elm Disease," Massachusetts Forest and Park Association, Waltham, Oct., 1967.

_____, "Injury to Sugar Maple from Deep Plantings," Northeast American Phytopathologists, Ithaca, N.Y., Nov., 1967.

_____,"The Causal Fungus, Ceratocystis ulmi," International Conference on Dutch Elm Disease, Ames, Iowa, Feb., 1968.

_____, "Diagnosis of Tree Problems," Iowa Arborists Association, Ames, Iowa, Feb., 1968.

_____, "Tree Problems for 1968," Tree Wardens, Arborists and Utilities Conference, Amherst, March, 1968.

McKenzie, M.A., "Summary of 22nd Annual Conference on Dutch Elm Disease," Massachusetts Forest and Park Association, Waltham, Oct., 1967.

_____, "Shade Tree Laboratories' Research and Control Programs," Tree Wardens, Arborists and Utilities Conference, Amherst, March, 1967.

_____, "Preventing Street Tree Losses in 1968," Worcester County Tree Wardens, Forests, and Moth Superintendents' Association, Millville, April, 1968.

PLANT AND SOIL SCIENCES DEPARTMENT

Barker, A. V., "Ammonium Nutrition of Onions," Northeast American Society for Horticultural Science, Harvard University, Jan., 1968.

Bramlage, W. J., "Relationships Between Watercore and Internal Breakdown and Factors Related to Their Development," New England Apple Harvesting and Storage Symposium, Amherst, March, 1968.

_____, and Elaine V. Barker, "Differential Ripening in Apples," Northeast American Society for Horticultural Science, Harvard University, Jan., 1968.

Colby, W. G., "Soluble Carbohydrate Reserves in Perennial Cool Season Grasses and the Use of Nitrogen Fertilizers," American Chemical Society, Chicago, Sept., 1967.

Lachman, W. H., "Some Effects of Heating Dry Embryos of Sweet Corn," Northeast American Society of Horticulture, Harvard University, Jan., 1968.

Lord, W. J., R. A. Damon, Jr. and B. Gersten, "Response of McIntosh Apple Trees to Simazine Alone and When in Combination with Hay and Black Polyethylene Mulch," Ibid.

Marsh, H. V., Jr. and W. Deacon, "Purification and Properties of an Enzyme from Banana Which Oxidizes Tyramine to Dopamine," American Society of Plant Physiology, Texas A. & M. University, Aug., 1967.

_____, and W. J. Bramlage, "Starch Metabolism in Apples," American Society for Horticultural Science, Ibid.

Maynard, D. N., "The Effects of Potassium on Ammonium Utilization in Tomatoes," Ibid.

_____, and C. L. Thomson, "Nutritional Survey of Sweet Corn in Massachusetts," Northeast American Society for Horticultural Science, Harvard University, Jan., 1968.

Odurukwe, S.O. and D.N. Maynard, "Iron Nutrition of Corn Inbreds," Ibid.

Smagula, J. M. and W. J. Bramlage, "Effects of Watercore on Respiration and Mitochondrial Activity in Delicious Apples," American Society for Horticultural Science, AIBS, Texas A. & M. University, Aug., 1967.

Southwick, F. W., "Extending the Harvest Season With Alar," New England Apple Harvesting and Storage Symposium, Amherst, March, 1968.

_____, "Post-Harvest Effects of Alar," Ibid.

Vengris, J., "Barnyardgrass Control in Field Corn," Northeast Weed Control Conference, New York, Jan., 1968.

VETERINARY AND ANIMAL SCIENCES DEPARTMENT

Anderson, D. L. and P. F. Consuegra, "Studies on the Dietary Calcium and Phosphorous Requirements of Immature Coturnix Quail," Poultry Science Association, Durham, N.H., Aug., 1967.

Carlson, V.L., C. F. Smyser, and G. H. Snoeyenbos, "DSE as an Enrichment Medium for Isolating Salmonellae from Animal By-Products and Poultry Litter," Northeast Conference on Avian Diseases, June, 1968.

Fenner, H., F. N. Dickinson and H. D. Barnes, "Relationship of Some Inorganic Rumen Fluid Components to Level of Intake and Time of Sampling after Feeding," American Dairy Science Association, Columbus, Ohio, June, 1968.

Gaunt, S. N., "Quantitative Inheritance of Milk Protein," Research Seminar, Cornell University, Oct., 1967.

Grover, R. M., "The Effects of Pre-Cooling and Warm Packing on Interior Egg Quality," Poultry Science Association, Durham, N.H., Aug., 1967.

_____, "The Role of Extension in Research," Poultry Specialists Workshop, Mt. Snow, April, 1968.

Liu, T. S. and G. H. Snoeyenbos, "Thermal Destruction of Salmonellae in Dry Feeds," Northeast Conference on Avian Diseases, June, 1968.

Lyford, S. J., Jr., "The Effect of Feeding Beet Pulp on the Level of Pectinase in Bovine Rumen Fluid," American Dairy Science Association, Columbus, Ohio, June, 1968.

Mellen, W. J., "Genetic and Other Sources of Variation in I^{131} Conversion Ratio," Poultry Science Association, Durham, N.H., Aug., 1967.

Olesiuk, O. M., V. L. Carlson, G. H. Snoeyenbos, and C. F. Smyser, "A Study of Experimental Salmonella typhimurium Infection in Two Flocks of Chickens," Northeast Conference on Avian Diseases, June, 1968.

Ruggles, L. H., D. L. Anderson, R. M. Grover, and R. A. Damon, "The Effect of Bird Density, Light Intensity and Diet on the Performance of Heavy Type Layers in Cages," Poultry Science Association, Durham, N.H., Aug., 1967.

Sevoian, M., "The Influence of Antibodies In Vivo and In Vitro on Cellular and Cell-free Preparations of a Type III Avian Leukosis Virus," International Symposium of Comparative Leukemias, Paris, France, July, 1968.

Smyser, C. F. and G. H. Snoeyenbos, "Evaluation of Several Cultural Methods for Isolating Salmonellae from Feedstuffs and Poultry Litter," Northeast Conference on Avian Diseases, June, 1968.

Snoeyenbos, G. H., "What Veterinarians Can Do About the Salmonella Problem," AVMA, Dallas, July, 1967.

_____, V. L. Carlson, C. F. Smyser, and O. M. Olesiuk, "Dynamics of Salmonellae Infection in Chicks Reared on Litter," Northeast Conference on Avian Diseases, June, 1968.

Snoeyenbos, G. H., B. A. McKie and C. F. Smyser, "Progress in Identifying and Maintaining Salmonellae-free Commercial Chicken Breeding Flocks," Ibid.

Stern, D. N., "Methods of Cooperating Between Extension Veterinarians and State and Federal Regulatory Veterinarians," Northeast Mastitis Conference, Stowe, Vt., Oct., 1967.

_____, "Use of Milk Screening Tests in Mastitis Control," Northeast Extension Veterinary Conference, Amherst, March, 1967.

_____, "How to Make $2,000 with a Mastitis Control Program," National Mastitis Council, Chicago, Ill., Feb., 1968.

_____, "Cybernetics in Medicine," Public Health Extension Veterinarians, Atlanta, May, 1968.

_____, "Use of Audio-Visual Aids by Extension Veterinarians," AVMA, Dallas, July, 1967.

College of Agriculture

SUMMARY OF RESIDENT INSTRUCTION
1967-68

Department	NO. OF COURSES TAUGHT Fall	NO. OF COURSES TAUGHT Spring	NO. OF CREDITS Fall	NO. OF CREDITS Spring	NO. OF STUDENTS Fall	NO. OF STUDENTS Spring	STUDENT CONTACT HOURS Fall	STUDENT CONTACT HOURS Spring	FACULTY CONTACT HOURS Fall	FACULTY CONTACT HOURS Spring
Agricultural and Food Economics	23	26	64	56	773	653	2,697	2,094	98	80
Agricultural Engineering	9	11	24	31	181	594	748	945	56	48
Cranberry Station	0	0	0	0	0	0	0	0	0	0
Entomology and Plant Pathology	24	25	51	59	610	782	1,712	1,861	63	79
Environmental Sciences	1	0	3	0	8	0	24	0	3	0
Feed, Fertilizer, Dairy Law, etc.	1	0	3	0	18	0	90	0	5	0
Food Science and Technology	31	34	80.5	89	1,238	1,150	3,732	3,030	129.5	125
Forestry and Wildlife Management	43.4	57	123	169	735	546	2,629	2,167	156	162
4-H Club	2	1	6	3	10	11	39	44	7	4
Landscape Architecture	29	26	80.5	72	1,036	1,248	3,297	3,180	158	133
Plant and Soil Sciences	42	43	130	115	1,386	1,042	3,669	2,987	185	177
Veterinary and Animal Sciences	22.8	27	56.5	79	728	893	1,896	2,206	98	110
TOTALS	228.2	250	621.5	673	6,723	6,919	20,533	18,514	958.5	918

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COLLEGE OF AGRICULTURE

GRADUATE STUDENTS AND POST-DOCTORAL FELLOWS

Department	Graduate Students M. S.	Ph. D.	Degrees Awarded M. S.	Ph. D.	Post-Doctoral Fellows
Agricultural and Food Economics	13	5	5	-	-
Agricultural Engineering	8	6	8	-	-
Cranberry Station	-	-	-	-	2
Entomology	13	11	2	-	-
Environmental Sciences	-	-	-	-	3
Food Science and Technology	26	23	5	4	3
Forestry and Wildlife Management	35	7	16	-	-
Landscape Architecture	40	-	15	-	-
Plant Pathology	7	4	1	1	-
Plant and Soil Sciences	21	9	4	1	-
Veterinary and Animal Sciences	16	12	7	3	3
Totals	179	77	63	9	11

COLLEGE OF AGRICULTURE

UNDERGRADUATE STUDENTS

APPLICATIONS FOR ENTRANCE SEPTEMBER, 1967

	Number Received	Number Accepted	Number Rejected	Number Enrolled
Agricultural and Food Economics	7	5	2	2
Agricultural Engineering	8	4	4	5
Animal Science	43	21	22	17
Entomology	2	1	1	1
Food Science	22	11	11	6
Forestry	252	124	128	39
Landscape Architecture	64	30	34	15
Park Administration	19	11	8	0
Plant & Soil Science	24	9	15	8
Restaurant & Hotel Management	125	65	60	21
Pre-Veterinary	38	23	15	3
Wildlife	150	81	69	34
College of Agriculture	-	-	-	4
Totals	754	385	369	155

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COLLEGE OF AGRICULTURE

STOCKBRIDGE SCHOOL OF AGRICULTURE

APPLICATIONS FOR ENTRANCE SEPTEMBER, 1967

	Number Received	Number Accepted	Number Rejected	Number Enrolled
Agricultural Business Management	17	13	4	12
Animal Science	107	92	15	75
Arboriculture & Park Management	121	75	46	59
Dairy Technology	13	11	2	10
Floriculture	33	28	5	25
Food Distribution	25	20	5	18
Fruit & Vegetable Crops	10	9	1	7
Landscape Operations	44	32	12	29
Lumber & Building Materials Business Mgt.	14	9	5	7
Restaurant & Hotel Management	120	74	46	60
Turf Management	59	41	18	31
Wood Utilization	35	29	6	19
Totals	598	433	165	352

COLLEGE OF AGRICULTURE

GRADUATE ENROLLMENTS BY DEPARTMENTS (FALL SEMESTER)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
A & F Econ	5	3	2	3	2	3	13	14	13	30	39	30	26	30	25	27	29	18
Agric Eng	-	-	-	-	-	-	3	3	3	7	9	13	11	12	16	18	13	10
Agronomy	9	8	7	3	6	5	5	5	4	7	4	3	4	-	-	-	-	-
Dairy Ind	6	6	3	4	2	3	4	3	2	1	1	3	3	-	-	-	-	-
Ent & P Path*	-	-	-	-	-	-	-	-	11	13	15	12	17	14	20	24	24	35
Flori	3	1	2	3		4	3	3	4	1	3	2	4	-	-	-	-	-
Food Sci	38	39	33	34	38	31	30	27	30	29	20	18	19	21	35	46	42	51
For & Wildlife	6	5	14	4	3	4	5	6	5	10	18	11	13	12	44	46	46	45
Land Arch	7	5	5	5		8	10	9	10	6	4	3	5	4	15	19	30	40
Oleri	3	1	3	3		1	1	1	1	1	2	1	2	-	-	-	-	-
Plant & Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	8	13	19	19	29
Pomology	1	1	0	0	0	0	0	0	1	0	0	0	2	-	-	-	-	-
Poultry Sci	1	4	5	5	1	3	4	4	2	4	5	5	5	-	-	-	-	-
Vet & An Sci	2	1	0	2	5	4	4	3	4	2	5	3	5	16	18	29	29	28
Total	81	74	74	66	57	71	82	78	90	111	122	104	116	117	186	228	232	256

* In Arts and Sciences prior to 1958

COLLEGE OF AGRICULTURE

UNDERGRADUATE ENROLLMENTS BY MAJOR (FALL SEMESTER)

Major	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
A & F Ec	7	6	5	3	7	10	15	13	13	7	7	8	13	13	11	21	26	35
Ag Eng	-	-	-	-	-	-	-	-	2	2	6	4	5	4	3	3	7	8
Agron	15	15	12	14	9	12	14	13	16	14	10	8	8	-	-	-	-	-
Dairy Ind	25	11	11	15	10	10	10	11	7	7	12	5	12	-	-	-	-	-
Ent & P Path*	-	-	-	-	-	-	-	-	5	6	3	12	14	12	13	13	10	12
Flori	35	31	32	29	17	16	16	11	9	9	6	7	8	-	-	-	-	-
Food Sci	38	40	52	50	45	38	32	26	28	21	26	38	47	28	35	22	21	25
Forestry	46	47	52	61	70	68	64	57	61	65	84	77	82	73	73	90	135	129
Land Arch	47	50	51	50	49	43	37	37	35	42	55	66	63	63	65	88	87	80
Oleri	17	12	11	7	7	6	6	5	4	3	5	6	1	-	-	-	-	-
Park Adm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	12	32
Plant & Soil Sci	-	-	-	-	-	-	-	-	-	-	-	-	-	28	29	26	34	29
Pomology	10	10	12	8	2	2	2	1	4	2	2	5	1	-	-	-	-	-
Poultry Sci	40	33	24	24	15	14	12	8	12	10	8	7	4	-	-	-	-	-
Rest & Hotel	-	-	-	-	-	5	11	12	10	11	15	23	23	26	35	58	82	129
Vet & An Sci	74	71	71	69	69	55	36	32	31	30	37	28	24	43	53	52	66	75
Wild & Fish Biol	55	46	46	41	50	45	42	42	40	45	37	46	56	55	78	98	130	151
Totals	409	372	378	371	350	324	297	268	277	274	313	341	361	345	395	487	620	705

*In College of Arts and Sciences prior to 1958.

PERCENT OF INCREASE 1950 TO 1967: 72%

Stockbridge School of Agriculture

ENROLLMENTS BY MAJOR (FALL SEMESTER)

Major	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
An Husbandry	99	86	81	85	70	-	-	-	-	-	-	-	-	-
An Science	-	-	-	-	-	89	97	88	87	70	73	69	67	111
Vet & An Science	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arboriculture	27	30	27	34	43	36	23	23	11	-	-	-	-	-
Arbor & Park Management	-	-	-	-	-	-	-	-	51	98	100	100	100	99
Agric Business Management	-	-	-	-	-	-	-	-	-	-	-	-	5	16
Dairy Industry	20	-	-	-	-	-	-	-	-	-	-	-	-	-
Dairy Technology	-	19	21	23	22	27	20	19	23	26	26	21	16	21
Floriculture	32	36	25	16	24	30	28	31	39	33	33	34	33	43
Food Distribution	-	-	-	-	-	10	16	26	24	15	17	23	26	29
Food Distribution 1-year	-	-	-	-	-	-	-	-	-	6	6	6	4	-
Food Management	28	32	27	27	34	45	47	43	48	-	-	-	-	-
Rest & Hotel Management	-	-	-	-	-	-	-	-	-	61	63	70	85	90
Forestry	22	29	31	33	36	39	34	30	16	-	-	-	-	-
Fruit Growing	0	4	7	8	9	7	6	5	2	-	-	-	-	-
Vegetable Crops	9	15	13	13	12	13	13	7	1	-	-	-	-	-
Fruit & Vegetable Crops	-	-	-	-	-	-	-	-	-	11	11	15	18	15
Ornamental Horticulture	43	48	51	-	-	-	-	-	-	-	-	-	-	-
Landscape Operations	-	-	-	46	47	46	51	49	46	43	44	48	48	51
Lab Animal Management	-	-	-	-	-	-	-	-	-	-	-	-	6	*
Lumber & Bldg Mat Bus Mgt	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Poultry Husbandry	25	26	22	14	15	-	-	-	-	-	-	-	-	-
Poultry Science	-	-	-	-	-	16	12	9	14	8	8	2	-	-
Turf Maintenance	13	18	22	27	35	-	-	-	-	-	-	-	-	-
Turf Management	-	-	-	-	-	36	44	47	65	82	85	84	85	70
Wood Products	-	-	-	-	-	-	-	15	19	-	-	-	-	-
Wood Utilization	-	-	-	-	-	-	-	-	-	20	20	28	39	34
Totals	318	343	327	326	347	394	391	392	446	473	486	500	532	586

* Included in An Science

COLLEGE OF AGRICULTURE

PROGRAMS OF STUDY

(Degrees and Majors)

Majors	Degrees B.S.	M.S.	Ph.D.	Stockbridge Associate
Agricultural Business Management	X	X	X	X
Agricultural Engineering	X	X	X	
Agronomy	X	X	X	
Animal Science				X
Arboriculture and Park Management				X
Dairy Technology				X
Entomology	X	X	X	
Environmental Design	X			
Fisheries Biology	X	X	X	
Floriculture				X
Food Distribution				X
Food Marketing Economics	X	X	X	
Food Science and Technology	X	X	X	
Forestry	X	X	X	
Fruit and Vegetable Crops				X
Horticultural Science	X	X	X	
International Agricultural Economics	X	X	X	
Landscape Architecture		X		
Landscape Operations				X
Lumber/Building Materials Business Management				X
Natural Resource Economics	X	X	X	
Park Administration	X			

(Continued)

PROGRAMS OF STUDY (Continued)

Majors	Degrees B.S.	M.S.	Ph.D.	Stockbridge Associate
Plant Pathology	X	X	X	
Plant Science	X	X	X	
Pre-Veterinary Science	X	X	X	
Regional Planning		X		
Restaurant and Hotel Management	X			X
Soil Science	X	X	X	
Turf Management	X	X	X	X
Wildlife Biology	X	X	X	
Wood Science and Technology	X	X		
Wood Utilization				X

RHB:mo-5-21-68

UNIVERSITY OF MASSACHUSETTS

College of Arts and Sciences

A N N U A L R E P O R T

Period Covered: July 1, 1967 through June 30, 1968

Submitted to: President John W. Lederle

Submitted by : I. Moyer Hunsberger

I. Moyer Hunsberger
Dean, College of Arts and Sciences
August 30, 1968

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NEW FACULTY APPOINTMENTS

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I. BUDGET ALLOCATIONS

Account	FY 1966	FY 1967	FY 1968
03[1]	$ 115,462	$ 162,262	$ 168,000
10	23,775	34,410	37,000
11	1,000	4,100	------
12	20,800	39,200	40,000
13	186,425	200,600	238,000
14[2]	13,000	13,950	14,300
15	205,083	248,200	187,000
16	9,750	15,000	20,000
TOTALS	$ 575,295	$ 716,722	$ 704,300
Salaries (01, 02)	$ 5,424,364	$ 6,375,512	$ 7,895,140
(03)	139,641	81,138	30,159
Grand Totals[3]	$ 6,139,300	$ 7,173,372	$ 8,629,599

Footnotes

(1) Does not include faculty salaries paid from Account 03.

(2) Does not include allocations for telephone charges.

(3) No allocations were made to the College or to individual departments for the purchase of books. Instead the Library honored virtually all requests.

FY '68 FUNDS ENCUMBERED

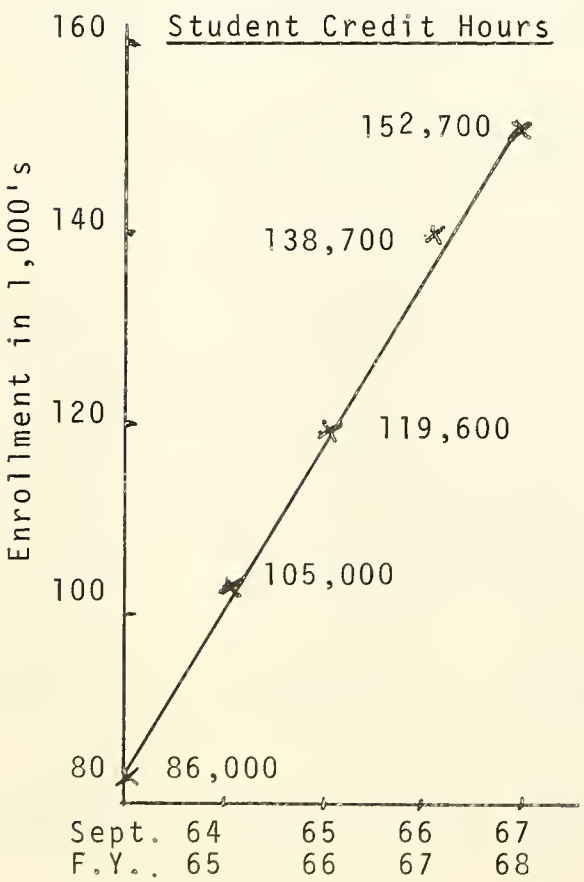
The total funds reported by the Treasurer's office to have been encumbered in each of the several accounts during each of the past four years is presented in the table below. Also indicated is the "dollars per student credit hour (SCH)" and, for Accounts 10, 14 and 14_1 the "dollars per full time equivalent faculty position." Positions in the Dean's office have been included in the total of faculty positions. Finally, the total encumbered in the "support accounts" is presented as a per cent of salaries paid.

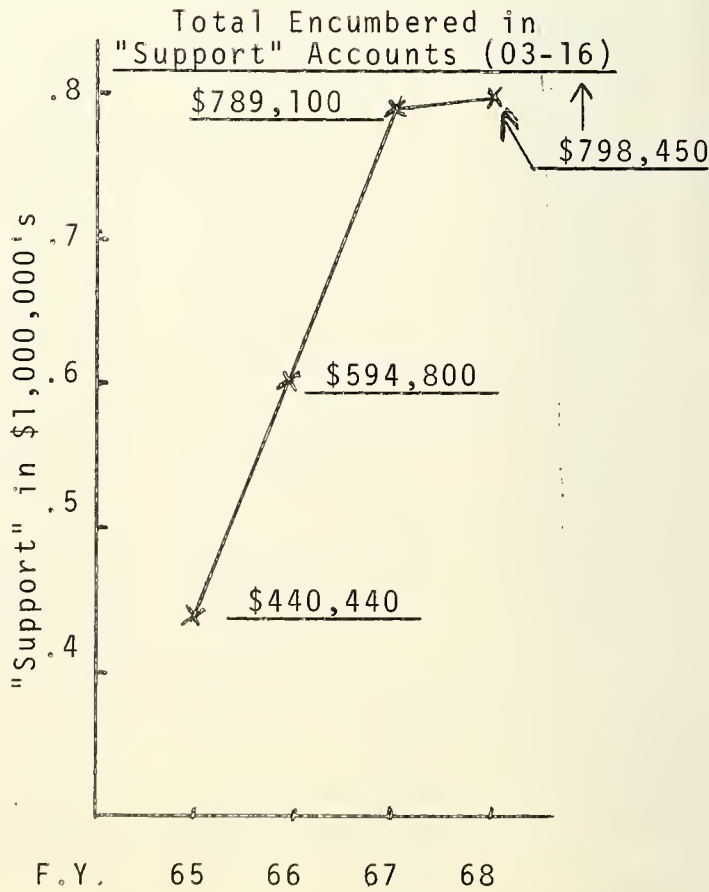
	FY '65	FY '66	FY '67	FY '68
Student Credit Hours (SCH)	105,000	119,620	138,692	152,731
	Funds Encumbered	Funds Encumbered	Funds Encumbered	Funds Encumbered
Salaries 01+02+03 Faculty	3,931,384	4,978,086	6,456,621	7,925,299
"Support" 03 minus Faculty	71,130 0.68/SCH	83,500 0.70/SCH	169,800 1.22/SCH	161,169 1.02/SCH
10	16,110 0.15/SCH $43.66/fac.	23,060 0.19/SCH $50.02/fac.	33,500 0.24/SCH $62.42/fac.	38,517 0.25/SCH $63.04/fac.
12	24,760 0.24/SCH	23,050 0.10/SCH	38,210 0.28/SCH	43,031 0.28/SCH
13	135,590 1.29/SCH	187,670 1.57/SCH	203,990 1.47/SCH	241,495 1.58/SCH
14	13,260 0.13/SCH $35.93/fac.	15,600 0.13/SCH $33.84/fac.	22,100 0.16/SCH $41.08/fac.	27,370 0.18/SCH $44.79/fac.
14_1	26,960 0.26/SCH $73.06/fac.	43,650 0.36/SCH $94.69/fac.	59,940 0.43/SCH $111.41/fac.	81,659 0.53/SCH $134.75/fac.
15	142,750 1.36/SCH	205,180 1.72/SCH	243,020 1.75/SCH	188,236 1.23/SCH
16	9,880 0.09/SCH	13,080 0.11/SCH	18,450 0.13/SCH	21,975 0.14/SCH
Total "Support" 03 minus Faculty - 16	440,440 4.10/SCH	594,790 4.97/SCH	789,100 5.69/SCH	803,452 5.22/SCH
"Support" Salaries	11.20%	11.95%	12.2%	10.19%

Inspection of the table on the previous page reveals several facts, including the following:

1. Student credit hours of instruction provided by the College show a "straight line" progression with a 50% increase between FY '65 and '68.
2. The funds paid in salaries for all staff both professional and non-professional have increased by $1,500,000 each of the last two years. Although the amount is large, still greater increases will be required.
3. The encumbrances in the "support accounts" (03-16) totaled $0.47 less per student credit hour than in FY '67 and amounted to only 10.1% of the salary budget as compared to eleven to twelve percent in the previous three years. This situation is a consequence of sharp reductions of funds in Accounts 03 (honoraria, student labor, etc.) and 15 (equipment). We shall be teaching and undertaking research with the tools of yesteryear, and these in insufficient quantity, if funds for equipment are not significantly increased! Funds for supplies (Account 13) were equal to those of FY '66 in relation to student credit hours; they are insufficient to provide adequate reserves for efficient operation.

The relationship between teaching load and the "support budget" is illustrated clearly in the graphs below.





II. ORGANIZATIONAL CHARTS

A. DEPARTMENTS AND ADMINISTRATIVE UNITS BY (UNOFFICIAL) DIVISIONS

Dean's Office

Fine and Performing Arts

Art
Music
Speech

Humanities

Comparative Literature
English
Germanic Langs. & Literature
History
Philosophy
Romance Langs.
Slavic Langs. & Literature

Social Sciences

Economics
Government[1]
Psychology
Sociology-Anthropology

Biological Sciences

Botany
Microbiology
Zoology

Physical Sciences

Biochemistry
Chemistry
Geology (Geography)
Physics & Astronomy[2]

Mathematics & Statistics

Mathematics
Statistics[3]

Interdepartmental Program

Asian Studies

Footnotes

(1) The Bureau of Government Research is a part of the Government Department.

(2) The Astronomy program has a Chairman who is also Chairman of the Four-College Department.

(3) Statistics operates as a separate unit without departmental status.

B. DEGREES, MAJORS AND OTHER PROGRAMS OF STUDY

Majors for Bachelor of Arts Degree

Anthropology
Art
Astronomy[1]
Biochemistry
Botany
Chemistry
Classics[1]
Economics
English
French
Geology
Government
History
Journalistic Studies
Mathematics
Microbiology
Music
Philosophy
Physics
Pre-Dental Studies
Pre-Medical Studies
Pre-Veterinary Studies
Psychology
Russian
Sociology
Spanish
Speech
Zoology

Majors for Bachelor of Science Degree

Astronomy[1]
Biochemistry[2]
Botany
Chemistry
Geology
Mathematics
Microbiology
Physics
Pre-Dental Studies
Pre-Medical Studies
Pre-Veterinary Studies
Psychology
Zoology

Bachelor of Fine Arts

Art Education
Studio Art

Bachelor of Music

Music

Programs without Major

Asian Studies
Chinese
Comparative Literature
Danish
Geography
Italian
Japanese
Linguistics
Polish
Portuguese
Statistics
Swedish

Majors for Master of Art or Master of Science

Anthropology
Astronomy[2]
Biochemistry
Botany
Chemistry
Comparative Literature[2]
Economics
English
French
Geology
German
Government
History
Mathematics
Microbiology
Philosophy
Physics
Psychology
Russian
Sociology
Spanish
Speech
Statistics[2]
Zoology

B. DEGREES, MAJORS AND OTHER PROGRAMS OF STUDY (continued)

Majors for Master of Fine Arts

Art
English
Speech

Master of Music

Music

Majors for Doctor of Philosophy

Anthropology[2]
Astronomy
Biochemistry
Botany
Chemistry
Comparative Literature[2]
Economics
English
French
Geology
German
Government
History
Mathematics
Microbiology
Philosophy
Physics
Psychology
Sociology
Spanish
Zoology

Footnotes

(1) Four-College undergraduate degree program

(2) Effective September of 1968

III Personnel

Data relevant to the professional personnel of the College is presented in three tables, as follows:

TABLE 1: PROFESSIONAL POSITIONS (FTE) FILLED BY RANK (Appendix A, page 1)

TABLE 2: FACULTY POSITIONS (FTE) FILLED BY DIVISION, DEPARTMENT, AND RANK: FALL SEMESTER (Appendix A, page 2)

TABLE 3: PROFESSIONAL PERSONNEL ACTIONS (Appendix A, page 4)

In each case reference is to full-time equivalent positions which were filled in September of the year indicated. Inspection of these tables reveals the growth and some of the significant changes during the past three years.

The administration of the College has been enhanced by the appointment, as of July 1, 1967, of Dr. John M. Maki to the newly-created position of Vice-Dean. His assistance has been indispensable particularly in matters of faculty personnel and revision of the course requirements for a degree from the College. Associate Dean Wagner and Assistant Deans Rollason, Savereid and McFarland, the latter two in a half-time capacity, have continued in their respective positions, capably handling the increased responsibilities imposed by an expanding College. Thus, the number of administrative positions in the College increased from 4.5 to 5 though there was no new appointment to the position of Assistant Dean with particular responsibility for the academic affairs of students in the class of '71.

The number of faculty positions was 73.5 (13.8%) greater this year than a year ago. Analysis of this increase according to rank reveals the addition of 6 professors, 31 associate professors, 24.75 assistant professors, 9.75 instructors, and 2 lecturers. Thus, 50% of the increase is in positions of the upper two ranks, though the total in these ranks remains below (at 41%) that considered most desirable in a university committed to a superior graduate program.

All departments except Slavic Languages and Literatures, Microbiology and Statistics shared in the expansion of the faculty. The increase in the number of positions in the several divisions of the College equaled 18% in the Fine Arts, 13% in the Humanities, 21% in the Social Sciences, 14% in the Physical Sciences and 14% in Mathematics and Statistics. Expansion of faculty positions in the Biological Sciences was only 1% largely because of limitations of space.

The number of non-teaching professional positions remained unchanged from last year. The demands of an expanding College dictate the allocation of additional positions next year.

Teaching assistants perform an important role in undergraduate instruction. Furthermore, through the award of teaching assistantships the College both makes it financially possible for qualified students to pursue graduate study and satisfies one aspect of our obligation to provide sound education and experience for those who will become the college professors of the next generation. Thus, I am pleased to report that a 30% increase over last year in the funds available for the support of Teaching Assistants during 1967-68 has permitted a 16% increase in the number of Teaching Assistants and a 12.5% increase in the average stipend. The increase in stipend was mandatory if we were to continue to compete equally with other universities in attracting superior students.

There were 26 postdoctoral research associates in eight Departments in the College. They are not supported on state funds; compensation is provided by research grants. The presence of these individuals makes a significant contribution to the atmosphere of a quest for knowledge, and their assistance in the training of advanced undergraduates and graduate students in undertaking research projects is often considerable.

The number of each of the several kinds of professional personnel actions (Table 3) was increased over the previous two years in a manner roughly proportional to the increase in the size of the faculty. The number of appointments to tenure appears to be an exception to this generalization, though it will be noted that the higher figuring for a year ago was a consequence of actions which were effective in two different fiscal years.

I am pleased to note the appointment by the Trustees of Professor Harold D. Boutelle to the position of Emeritus Professor of Mathematics. Professor Boutelle was first appointed to the faculty in 1926 and has contributed significantly to the education of several generations of college students in the intervening 41 years.

It is with deep regret that I must note the tragic death of Howard Lebow, Assistant Professor of Music, in January 1968. A distinguished pianist with enthusiasm for and a total commitment to the department of which he was a member, Mr. Lebow made a major contribution to the standards, morale and strength of that department. The entire community and concert audiences here and abroad suffered a serious loss in his untimely death.

III. PERSONNEL

B. NON-PROFESSIONAL PERSONNEL

The situation in respect to secretarial assistance in the College is deplorable and, in some departments, approaches the desperate. The number of non-professional positions, both secretarial and non-secretarial (technical) is listed by rank in Table 3A. The ratio of full-time equivalent faculty positions (FP) to secretarial positions (SP) in each Department is presented in Table 3B; this table also shows the highest-ranking secretarial position in each Department. Table 3C presents, separately, the ratio of faculty positions to secretarial and technical positions in the College in the fall of 1965 and 1966 and in the fall and spring of 1968 fiscal year.

In spite of an increase of 73 faculty positions this fall, only three new secretarial positions were allocated to the College prior to March, 1968. Thus a faculty-secretarial ratio of 7.9 to 1 existed for the first six months of the academic year. A ratio of 8.5 or more faculty positions per secretary existed in ten Departments! The allocation of six additional positions in March, 1968 alleviated the situation to the extent that the ratio was reduced to 7.3 faculty positions per secretary. However, even this value represents another step increase from two years ago. Faculty productivity and morale suffer under the present conditions. Teachers could devote more time to their students if they were freed from many of the secretarial chores now forced upon them. Every effort must be made to reach a ratio of five faculty positions per secretary in the near future.

The situation in respect to technical positions in the College is little better than that relative to secretarial positions. In September, 1965 there was a ratio of 13.3 faculty positions per technical position. This ratio was reduced to a value of 12.7 in 1966 but reverted to 13.2 during the year of this report. A ratio of 10 to 1 remains our goal for the immediate future.

A relatively modest appropriation would greatly improve the secretarial and technical assistance provided the faculty. Positive steps must be taken immediately.

IV. STUDENTS

This section discusses not only some of the quantitative aspects of student affairs but also some of the special projects and services for students. The last three sections (G, H & I) summarize surveys undertaken in the hope that factual information concerning certain of the College's graduation requirements would be especially useful in decisions soon to be made about revision of the curriculum. Because graduate students are more closely associated with their particular departments than with the College, this section pertains primarily to undergraduate students. Much of the quantitative information is given in Tables 4 - 11 in Apendix A.

A. Enrollment, teaching loads, degrees and cumulative averages.

Enrollment in the several schools and colleges since 1955, when the College of Arts and Sciences was established, is presented by "head count" in Table 4. Changes in the distribution of students among the classes (undergraduate vs. graduate, etc.) and in the distribution of undergraduates among the schools and colleges can be recognized most easily by reference to Table 5 in which the data in Table 4 have been converted to percentages. During the 13 year span, total University enrollment has increased 3.5 times (from 4,341 to 15,202). The percent of undergraduates with majors in the College grew from 47.4% in 1955 to 58.2% in 1964 but has decreased each succeeding year to its present level of 54.7%. It may be noted that the largest of the other schools enrolls only 10.7% of the undergraduates. The percent of graduate students in the College continues to increase each year and in September, 1967, constituted 51.5% of the candidates for advanced degrees.

Under graduate students in all schools in the University obtain much of their general education through enrollment in courses in the College. Therefore, the teaching effort of the College, which is summarized in Table 6 according to divisions and departments, is closely correlated with total undergraduate enrollment. Student credit hours of instruction (SCrH) during the fall semester was 10.1% greater than a year ago; undergraduate enrollment was increased 11%. The amount by which student contact hours (SCoH) exceeds student credit hours is a rough measure of the extent to which laboratory work is involved in the teaching operations of the department; the fact that the number of student contact hours increased only 6% over last year is explained in part by the introduction of science courses with reduced laboratory for non-science students.

The total number of sections (#Secs) and number of different courses (#Crs), exclusive of Honors, Special Problems and Theses, taught in each Division and Department is also indicated in Table 6. The ratio of the number of sections to the number of courses represents an average number of sections per course; one wonders whether the College might not better serve the students by offering more different courses with fewer sections of each. The extent of teaching essentially on a one-to-one basis for undergraduates

appears in the column headed "Sp,H" (Special Problems, Senior Honors, etc.) and the number of dissertations in process reflects the extent of this form of teaching for graduate students. The apparent reduction from a year ago in the latter type of undergraduate instruction is probably illusory and is a consequence of less rigorous efforts on our part last fall to obtain complete information from all departments. Regardless of the true absolute value, many of us feel that we should work toward a significant increase in independent study on the part of advanced undergraduates.

The last column of Table 6 is an index of the change in teaching load from the fall to the spring semester. Overall, the College has about a 5% decrease in teaching load from fall to spring, but this pattern does not apply to all departments. In general, departments which organize courses on a one-year basis show a decrease while those with courses on a one-semester basis show an increase. The development of the Comparative Literature program accounts for one of the notable exceptions and the other, geography, is related to the fact that the single staff member in the fall was joined by two others for the spring.

Table 7 presents the three-year patterns of the increase in the number of majors. Undergraduates in all four years are included. The patterns are slightly distorted by the fact that 191 freshmen and sophomores chose the general major "CA & S" in accordance with the College's new policy of not requiring underclassmen to enroll in a specific departmental major. The College increases are 14% from 1965 to 1966 and 10% for the following year.

Table 8 presents the three-year pattern of full-time-equivalent students, undergraduate and graduate, by department and division. Construction of this table was accomplished by calculating the number of FTE undergraduate students on the basis of student credit hours (15 undergraduate student credit hours equals one FTE student) to the total of which was added the number of FTE graduate students as calculated by the Graduate School. The year to year increases in the total number of FTE students in the College are 23% and 12%, respectively. This pattern is reflected in the divisional subtotals but not in most individual departments.

It is generally recognized that a considerable part of the teaching load of the College involves students majoring in other schools in the University. An estimate of this "service load" is revealed by calculating the ratio of FTE students (Table 8) to majors (Table 9) in the College.

	'65	'66	'67
FTE Students / Majors	1.28	1.39	1.41

Although a value greater than one may be in part a consequence of some of our students taking more than 15 credits, it is clear that during the past year the service load constituted nearly 30% of the College's total teaching.

Table 9 shows the Student-Faculty ratio by department and division in two forms, first with only faculty positions used and then with graduate teaching assistants counted as sharing the load. The Teaching Assistant Equivalent is an approximation obtained by the rule that three teaching assistantships are equivalent to one F.T.E. faculty position, and an assistantship results from an amount of money ($2700) available as an average stipend.

With the expansion of the graduate school and the attendant increase in effort on the part of the faculty in supervision of master's and doctoral theses, it becomes increasingly important to reduce the student to faculty ratio, which for each of the past three years has been as follows:

1965-66 --- 18.2

1966-67 --- 18.7

1967-68 --- 18.2

While I am pleased to recognize that the student-faculty ratio has reverted to that of two years ago, it must be reduced to 15 if we are to give increased attention to the individual student.

A summary of the degrees awarded is presented in Table 10. The Bachelor of Fine Arts (B.F.A.) and Master of Music (M. Mus.) were granted for the first time. It is also noteworthy that the graduate degrees comprise a quarter of the total and the Departments of Biochemistry, Germanic Languages and Literatures, and Microbiology have joined the growing list of departments which have awarded the doctorate.

Table 11 shows the distribution of cumulative averages for the undergraduates in each class, as of the end of the spring semester. It is interesting to note that the percentage of students with averages 3.6 or above increases regularly as one progresses from seniors to freshmen and that the percentage below 1.8, the minimum average now required for graduation, shows a similar increasing progression. It is noteworthy that the percentage of each class with an unsatisfactory cumulative average would jump to well over 10% if the new definition of unsatisfactory average (0.2 point higher) were applied.

B. National Recognition of Outstanding Students.

Again this year I am pleased to report that several students in the College have achieved national recognition for superior academic work and ability. Those so honored are listed on the following page.

Woodrow Wilson National Fellowship Foundation Designates:

Richard G. Pruit	'68 - English
David A. Sibley	'68 - Mathematics

Harper's magazine 1968 Student Writing Contest:

First prize in the national essay contest:

Susan J. Tracy	'69 - English

Danforth Graduate Fellowship Program - Honorable mention:

Mark P. Kriger	'68 - Philosophy
Donald M. Hunsberger	'68 - History
Margaret W. Smith	'68 - History

Woodrow Wilson National Fellowship Foundation - Honorable mention:

Kathleen Bennett	'68 - English
Richard D. Majka	'68 - Physics
John F. Moesley	'68 - Mathematics

C. C A S I A C

The College of Arts and Sciences Information and Advising Center completed its first year in temporary quarters in South College, Entry C. The Center was established for the dual purpose of providing a source for information on College and University academic rules and curricular requirements and to assume the role of "adviser" for the freshman and sophomore students who have not committed themselves to a specific departmental major The Center operated under the guidance of the Associate and Assistant Deans with one full time staff member, Mrs. Mary Salus, and faculty members from departments who averaged one to four hours per week in the Center as consultants and advisers.

The Center started the year with 209 freshman and sophomore students listed as "CA & S" majors. The number of freshmen could well have been much larger, but the preliminary information sent to them did not explain the use of the general "CA & S" major. This was explained to them during summer counseling, and they were invited, but not urged, to postpone the choice of a specific major.

As was anticipated, the student use of the Center showed a wide seasonal variation. During the first seven weeks of the fall semester the number of calls averaged about ten a week but rose to a peak of 120 during the week of Counseling Day. The pattern for the spring semester was about the same except that there was not the rush of calls to pick up midsemester grades.

During the year there was about a 30% change in clientele with 69 students changing into the "CA & S" major and 73 making the opposite change. Not all the students who visited the Center were CA & S majors; some 20% of them were upperclassmen seeking other kinds of information. In all, 554 visits were entered in the log; they ranged from two minutes to nearly an hour in duration. The simple inquiries, too short to determine the name of the inquirer, were not entered in the log. Mr. Charles F. Popken, a graduate student in Education with an interest in collegiate counseling, served as a part time counsellor during the spring semester. His report praised the staff and the concept of the Center, deplored the dreariness of the rooms and the lack of advertising and publicity, and raised the question of including psychological counseling as part of the Center's activities.

D. FRESHMAN WEEK LECTURE SERIES

The College sponsored, for the second successive year, a series of lectures by distinguished faculty members for the entering students. These lectures had diverse subjects to provide for a wide variety of interests. The actual program was:

Friday, September 8, 1967 at 7 P.M.

1. Japan, A Century of Change
   John M. Maki, Vice-Dean, College of Arts & Science

2. Captain John Smith and Early America
   Everett Emerson, Englis

3. The Nature of Anxiety — Seymour Epstein, Psycholog

4. Chromosomes and Information Transfer
   Stanley C. Holt, Microbiolog

Saturday, September 9, 1967 at 7 P.M.

5. The Leonardo da Vinci Manuscripts of Madrid
   Jules Piccus, Romance Language

6. The Germanies of 1966 — Harold J. Gordon, Jr., Histor

7. Photochemistry — Peter Lillya, Chemistr

The student response, as indicated by the combined audiences of about four hundred, attests to the value of this program and reinforces our determination to continue it.

E. FRESHMAN SUMMER READING PROGRAM

In the summer and fall of 1967 the College of Arts and Sciences inaugurated a "Summer Reading Program for Freshmen." This program was an outgrowth of the Dean's continuing concern with the fact that Registration Week, and Freshman Orientation in particular, has long been a relatively trivial academic experience, lacking in intellectual substance.

In order to improve the intellectual tone of Orientation Week, the College previously initiated the College Freshman Week Lecture Series in the fall of 1966. At a luncheon given for the ten faculty lecturers in the 1966 lecture series, those present agreed that the lectures had been valuable, but it was suggested that even more could be done to create a serious beginning to the freshman's career. Most of the lecturers felt that the next logical development would be establishment of a summer reading list to be given to freshmen during the summer with provision made for faculty-led discussions of the books during Orientation Week for those students who wished to participate. The Dean's Office representatives agreed to attempt such a program.

Deans McFarland and Savereid handled most of the arrangements for the reading program. Five books were selected and three times were set aside during Orientation Week for the faculty-led meetings. With the help of Deans Rollason and Wagner, the program was given wide publicity during the summer, and in a postcard survey of the freshmen it was learned that more than a thousand students (about one in every three freshmen) were doing the readings.

In the selection of books some attention was given to offering books from a variety of fields. All were paperbacks; all were relatively brief; and all were chosen for their potential as discussion topics. The list was: Loren Eisley, The Immense Journey (an imaginative book on modern science); A. S. Neill, Summerhill (a controversial book on education): Martin Duberman, In White America (a play about the American Negro); Armitage, The World of Copernicus (a brief book on physical science); and Arthur Koestler, Darkness at Noon (a contemporary novel with a social-political theme).

Relative to the number of freshmen who said they were doing the readings, the number who turned out for the discussions was small. Only about one-hundred and fifty students attended the sessions, most of them participating in the discussions of Summerhill. Later we discovered that many students who did not attend the discussions nevertheless reported that they discussed the books "at length" with friends. This seemed to indicate that the program provided the sort of intellectual stimulus that we had hoped it would for some freshmen.

Finally, the willingness of many faculty members to give time to the program was heartening. They seemed to enjoy themselves and to share the largely favorable response of the students. As Dean Hunsberger wrote in his letter to the twenty-four faculty volunteers, "We greatly appreciate your support of this effort by the College to stimulate intellectual concerns among entering freshmen and for the commitment to undergraduate teaching which is evident in your willingness to participate."

F. Group Scheduling Project - Class of 1971

During the fall of 1966 the Dean asked his staff to explore possibilities for some form of group scheduling which, if successful, could eventually encompass a great majority, if not all, entering freshmen. Below is a summary of what has been accomplished in this direction.

1. By June of 1967 this course of action had been developed: 1) To attempt to arrange the schedules of 500 to 600 entering freshmen so that they would, in groups of a size of about 8 or 10, have identical schedules. The groups were to be chosen after the students had chosen their courses during the summer counseling and would be sought among students who had identical course elections. (The group size was chosen as 8 to 10 for two reasons. Phone calls to a few experienced teachers of courses similar to English Composition revealed that they did not relish the prospect of a complete section made up entirely of students with the same major. Also, the computer scheduling of other students might be inhibited if whole sections were usurped by the grou scheduling.) 2) Late in the semester the students would be polled fo their reaction. 3) The teachers would later be polled. 4) After the end of the semester, appropriate comparisons of student performances would be made.

Not all these aims were fully realized. Even with over 1,600 freshmen to work with, there are so many options open to non-science majors that it was difficult to find 10 students with the same course program. As a result the scheduled group was predominantly (55%) prospective science majors, and a total of only 265 students was able to be scheduled. The groups ranged in size from 4 to 10. These students were hand scheduled and the results fed into the computer before their classmates were scheduled. On registration day, 80 (30%) studen made changes in their programs which partially negated our efforts, bu none of these changes eliminated so much as half the group contact.

2. In late November, questionnaires were sent to all the students whose schedules had been "arranged" and responses have been received from 78% of them. Their general comments range from the sublime to the ridiculous: "This is how I met my 'steady'" to "I resent being used as a guinea pig." However, 36% contained a volunteered comment to the effect that being with a group alleviated the feeling of being just a number. Just over 80% of the responding students gave favorabl responses to the item "Do you feel that seeing some familiar faces in most of your classes helped you adjust more quickly to the University environment?" Forty-seven percent of the responders felt that the students should have a choice about participation.

Eighty-two percent of the responders indicated that they felt the group scheduling was less effective in large lecture sections than in small or recitation sections. In addition, 35% of the responders volunteered a comment deploring the use of large lecture sections. Other details of the questionnaire are available from CASIAC.

3. The faculty responses were almost as uniformly favorable as the students' Only three of the sixty-three respondents reported knowing about the experiment before being asked to comment These three had learned of it from the students after the latter were told about it.

The teachers were asked if they had noticed anything different about the scheduled section Twenty-nine (46%) of them said that they had noticed a difference, and of these twenty-nine, twenty-three (79%) felt that communication and discussion were easier in these sections than in others, while four of them reported an unfavorable impression of the scheduled section

On another item, 60% encourages us to try at least some cases in which whole sections were scheduled together for some courses.

In the free comment section, one-third of the responders urged extension and continuation of this program.

4. The performance of the scheduled group was compared with that of their classmates in terms of several objective measures First we looked at the incidence of some rather drastic matters: withdrawal, academic probation, and academic dismissal; then at the changes of major and at quality point averages The number of cases of each (and the rate per hundred students in parentheses) is given below:

	Scheduled	Not Scheduled
Withdrawals	1 (0.4)	29 (2.0)
Probations	17 (6.4)	95 (6.6)
Dismissals (Feb.)	10 (3.8)	29 (2.0)
Changes of Major	43 (16.6)	268 (18.7)
Mean of Semester Averages	2.18	2.21
Number of Students	265	1,438

The difference between the withdrawal rates approaches statistical significance at the five percent level; if there is a real difference it supports the students' expressed belief that the group scheduling helped them feel at home at the University. The slight, but insignificant difference in the rates for changing majors is consistent with the "feeling more at home" for the scheduled students. The differences in the other measures of academic attainment are not large, but they make it appear that the scheduling did not improve the academic performance.

5. For next year we hope to achieve partial group scheduling for all the Arts and Sciences freshmen who choose it We and the Scheduling Office will cooperate with other schools that wish to participate. Partial group scheduling means that we shall concentrate on small section courses, i.e., English Composition, Speech, Foreign Language, and Mathematics. Most groups will be about 10 but we hope to have some of 20-22 to get a basis of comparison In other words, the freshmen will be asked whether they wish to be scheduled with several of their classmates in three courses which they have all chosen; we think we can accommodate those who choose this kind of scheduling.

G. Exceptions to Graduation Requirements

Petitions for exception to College and University graduation requirements are received by the Associate and Assistant Deans. Not all petitions are granted, and most of the inquiries preparatory to a petition are diverted before they become formal petitions.

Below is a summary of the petitions which were granted for the 820 graduates in the class of 1965. The English and Speech requirements are also University requirements. In these cases the College deans can only recommend, not take, final action, but a well documented recommendation is almost always approved.

Requirement	Number of Exceptions	Comments
English 111, 112, 125, 126	8	7 of these were waivers based on D grade without credit.
Speech 101	1	
History 100, 101	1	
Humanities Electives	2	
Foreign Language	19	All involved substitution; 16 for one semester, 3 for two semesters.
Social Science	9	
Biological Science	11	Many of these were relief from one semester in view of a surplus of physical science courses.
Physical Science	20	12 seniors who received F's in Astronomy 102 were permitted to substitute any physical science course during the summer.
Mathematics	12	All of these arose from the question of credit for 121 or the statistics option which became generally applicable the next year.
TOTAL	83	10.1% of graduates

Every petition must be endorsed by a faculty member before the College deans will consider it. In most cases the supporting faculty member is the student's adviser; in some of the foreign language cases the support comes from the language teacher.

There were 10 graduates who were granted more than one exception; most of these involved the "special program for superior students" and commonly took the form of a release from one course in each of two areas to make room for courses more closely related to the student's major.

H. Use of Options for Two Requirements:
Means of satisfaction of the present requirements of two humanities electives and a third year of mathematics or science.

In connection with the study of curriculum revision it was necessary to determine how the students have exercised some of the options they now have.

One of the present requirements is "two humanities electives" which may include courses in the fine arts. Because the Cook Committee recommended that each student be required to take a course in Fine Arts, it seemed desirable to determine the number of students who used the fine arts option to meet the existing "humanities or fine arts" requirement:

Field of Major	No Fine Arts Courses	One Fine Arts Course	Two Fine Arts Courses	Studen
	%	%	%	
Fine Arts	1 (3)	2 (7)	27 (90)	30
Humanities	302 (74)	98 (24)	6 (2)	406
Social Sciences	179 (58)	93 (30)	36 (12)	308
Math or Science	78 (39)	89 (44)	35 (17)	202
Total	560 (59)	282 (30)	104 (11)	946

The other requirement which we examined was the third (optiona year of the mathematics-science requirement. This partial summary shows the main patterns of this choice.

Field of Major	Mathematical	Physical	Biological	Mixed	Tot
	%	%	%	%	
Fine Arts	26 (90)	--	3 (10)	--	29
Humanities	307 (77)	17 (4)	63 (16)	11 (3)	398
Social Sciences	283 (93)	6 (2)	14 (4)	2 (1)	305
Math-Science	197 (98)	3 (1)	--	1 (1)	201
Total	813 (87)	26 (3)	80 (9)	14 (1)	933

Thirteen students were granted an exception to this requirement, and they are not included in the summary. Thus the total in this latter table does not agree with that in the first table.

I. FOREIGN LANGUAGE AND THE CLASS OF 1969

In an effort to determine how the foreign language requirement affected the class of '69, a sample of 400 students in alphabetical sequence was chosen for study.

The first thing examined was the high school language background. It was found that the average (mean) number of units (years) of foreign language study was 4.35. Only 40 (10%) of the students had no more than two units, and 143 (36%) had studied only one language. Also, 293 (73%) had studied one language at least three years, and 35 (9%) had a total of 7 or 8 units in more than one language.

Further analysis showed that for 67 (17%) of the students the high school language study was equally divided between two languages and that for all the others, the major language was French (66%), Latin (20%), German (5%), Spanish (8%) and other (1%).

Another feature considered was the placement of students in courses in French. There were approximately 260 students who had completed two or more units of French in high school. Not all of them took the French placement test, and the records used in this study did not show the placement test results for 115 of these students who chose to study a new language in college. However, 145 students continued study of French so that the placement could be inferred. The number of these students placed into each of the several courses in French is shown below according to the number of years of high school study of the language.

French Placement	Number of students with "X" years of high school French				Total
	x=2	x=3	x=4	x=5	
Review - 0 credit	8	4	5		17
3rd semester	8	58	45	2	113
4th semester	1	4	9		14
Proficiency		1			1
Total who continued study of French	17	67	59	2	145
Number who studied French in high school	70	115	73	2	260

The final aspect of the study was an analysis of the progress of each of the 400 students in the sample toward completion of the foreign language requirement after four semesters or, for a few of the students, after four semesters and a summer session. At this time the score was:

completed requirement	292	73%
all but 1 semester	34	9%
half way	29	7%
one quarter	25	6%
no progress	19	5%

Fifty-three of the 108 who had not finished had at least one course failure in foreign language study at the University.

The following comparison of success in completing the requirement in four semesters between those who continue in a language and those who start a new language in college makes one wonder whether it is advisable to change languages.

	High School and College Language		
	Same	Different	Total
Completed	202	90	292
Not completed	34	74	108
Total	236	164	400

Admissions Policy of the University

The admissions policy of the University is of immediate concern to the faculty and administration of the college of Arts and Sciences. An analysis of data taken from reports released by the Admissions Office which applies to the Class of 1970 substantiates the existence of a differential admissions policy.

Although there may be some justification for this policy, an analysis of the data presented below leads to the conviction that it is being overdone.

Column I. The number of Freshmen in September of 1966.

Columns II and III. The number of academic probations and dismissals for the Freshmen in June of 1967 is in Column II: Column III gives the ratio (II/I) as a percentage and constitutes a failure rate.

Columns IV and V. The number of freshman admitted from the bottom 65% of their high school class is given in Column IV. The ratio (IV/I) as a percentage is given in Column V and is an index of admission standards; a high percentage indicates low admission standards.

	I	II	III	IV	V
Agriculture	148	40	29.8	59	43.8
School of Bus. Admin.	169	85	50.2	56	33.0
Education	163	30	18.4	4	2.4
Engineering	269	39	14.5	47	17.5
Home Economics	98	8	8.2	10	10.2
Nursing	90	0	0	0	0
Physical Education	137	23	16.8	42	30.6
Public Health	35	3	8.6	1	2.9
Subtotal	1,109	228	20.6	219	19.8
Arts & Sciences	1,734	208	12.0	158	9.1
Totals	2,843	436	15.3	377	13.3

The variation of percentage in Column V substantiates the differential admission policy. The highest figures are for the predominatly male schools.

The contention that the differential admission policy is being overdone is based on Column III. The very high failure rates in the first two instances could doubtless be eased by stricter admission standards in these cases.

One other point; if we were to be content with 2,500 freshmen, some of these poor academic risks could be avoided.

V. FACULTY SALARIES, PUBLICATIONS, RESEARCH PROJECTS AND OTHER PROFESSIONAL ACTIVITIES

A. Faculty Salaries

The salary ranges of the College faculty, by rank and year, from 1961 to the present, are presented in tabular and graphic form on the next two pages. This is followed by a graphic presentation of the distribution of salaries according to rank as of February, 1968.

Merit increases in salary this year totaled $396,000. The AAUP ratings of the median salaries paid to faculty in each of the several ranks are as follows:

	AAUP Rating, 1967-68
Professor	B
Associate	A
Assistant	A
Instructor	A

SALARY RANGES OF ARTS AND SCIENCES FACULTY BY RANK AND YEAR (1961 - 1968)

Note: Computations made in the underlined year.

Professors	Maximum	Median	Minimum
1961-62	12,896	10,387	8,502
1962-63	14,144	11,655	9,256
1963-64	18,111	13,858	12,246
1964-65	19,713	14,900	13,098
1965-66	21,000	15,288	11,484 (12,477)
1966-67	24,000	17,000	12,200 (14,200)
1967-68	26,000	18,000	14,500 (15,000)

Associate Professors	Maximum	Median	Minimum
1961-62	8,684	8,684	7,124
1962-63	9,776	9,256	7,748
1963-64	12,719	10,826	9,739
1964-65	13,858	11,484	9,939
1965-66	15,574	11,819	10,168
1966-67	19,600	13,450	11,000 (11,500)
1967-68	20,500	14,000	10,900 (12,000)

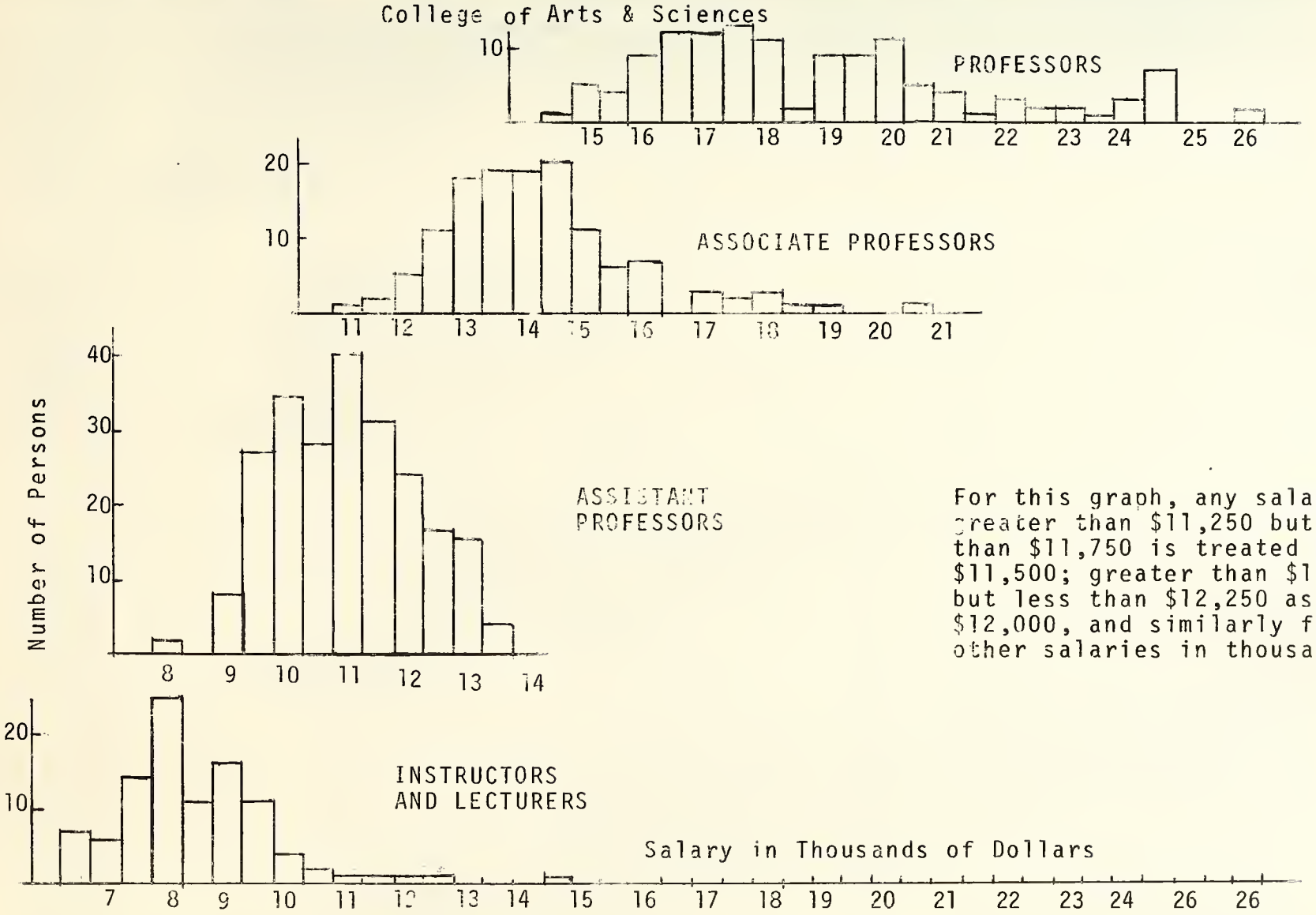
Assistant Professors	Maximum	Median	Minimum
1961-62	7,527	7,254	6,981
1962-63	8,060	7,527	6,435
1963-64	10,353	8,795	7,880
1964-65	11,819	9,253	7,467
1965-66	12,719	9,596	7,508
1966-67	13,000	10,800	7,800 (8,600)
1967-68	13,500	11,000	8,100 (9,100)

Instructors	Maximum	Median	Minimum
1961-62	6,484	6,006	5,070
1962-63	6,981	6,006	5,070
1963-64	8,567	7,165	5,820
1964-65	8,795	7,165	5,964
1965-66	9,053	7,165	5,964
1966-67	10,000	8,000	6,400 (6,500)
1967-68	11,500	8,200	6,400 (6,400)

Lecturers	Maximum	Median	Minimum
1966-67	10,900	9,300	6,500 (6,500)
1967-68	14,400	10,400	6,400 (6,400)

Figures in parentheses represent minimum salaries if the bottom 2% are eliminated. This exclusion is customary in analyses by the A.A.U.P.

FACULTY SALARIES (February, 1968) - DISTRIBUTION BY RANKS



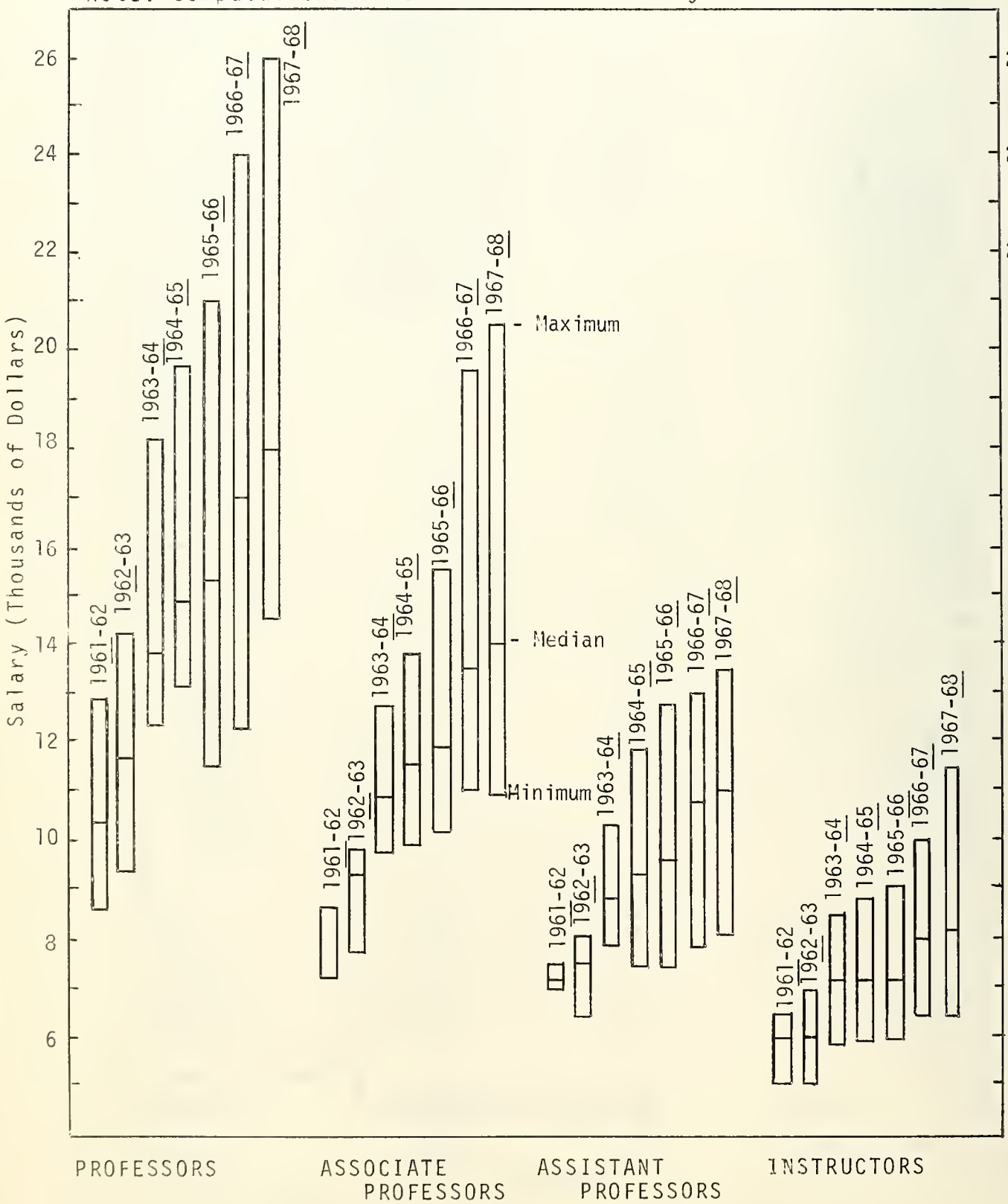
For this graph, any salary greater than $11,250 but less than $11,750 is treated as $11,500; greater than $11,750 but less than $12,250 as $12,000, and similarly for other salaries in thousands.

SALARY RANGES OF ARTS AND SCIENCES FACULTY

by

RANK AND YEAR (1961-1968)

Note: Computations made in the underlined year



V. FACULTY PUBLICATIONS, RESEARCH PROJECTS, AND OTHER PROFESSIONAL ACTIVITIES

B. Publications

The continuing activity of members of the faculty in creative, scholarly work is evidenced by their publications, research projects, and other professional activities. The four musical compositions and 40 books authored or edited by our faculty and published since July 1, 1967 are listed according to Division, Department and author in Table (12). It will be noted that the list includes revised editions of three previously published works and two translations, one from Russian into Hungarian and the other from English into Spanish.

Eight of the books were published by university presses. Two books were published by the Harvard University Press, and one each by the presses of Columbia, Fairleigh Dickinson, Johns Hopkins, Louisiana, New York, and Western Reserve University.

Approximately 450 articles in professional journals and chapters in books, plus a number of book reviews and poems, were also published by members of the faculty. In addition, many members of the faculty presented papers at professional meetings.

The faculty in the Department of Art have exhibited their works in 100 group and one-man shows. The works of Professors Coughlin, Gongora, Kamys, Mallary and Wang have been included in national exhibits in this country and South America or traveling exhibits sponsored by the Museum of Modern Art and the Smithsonian. Prints and drawings of Professor John Coughlin were purchased by the Metropolitan Museum of Art, New York, and 13 other museums, a painting by Resident Artist John Grillo was purchased by the Norfolk Museum of Art, and a vase created by Professor Lyle Perkins was selected by the Smithsonian for purchase by the U. S. National Museum, Washington, D. C.

The musicians on our faculty and their students have presented approximately 40 concerts and recitals during the year. The performances by the University bands, choruses and orchestra, too, have been broadly acclaimed for their high quality. Similarly, the theatrical performances and debates, which are directed by members of the faculty in the Department of Speech, have exhibited the quality anticipated of a distinguished university. The debaters participated in 305 intercollegiate debates (at a total of 28 tournaments) and 5 on-campus public debates, winning 59% of them.

C. Sponsored Research and Service Projects

Much of the research and other creative work on the part of members of the faculty is greatly facilitated by financial support from both within and outside the University. An accurate determination of the number of grants awarded and contracts consummated during the present fiscal year, and the annual value of each, is not readily determined. What is thought to be a statement of the minimum number and one-year value of awards made in FY '68, based upon a report from the Office of the Coordinator of Research, is presented according to Divisions and Departments in Table 13. The 167 grants with a total value of $102,819 awarded by the University Graduate Research Council are included in the tabulation. Awards from this source were very nearly equally divided between the fine and performing arts and humanities, the social sciences, and the natural sciences and statistics.

Also included in Table 13 is the Treasurer's report of salaries paid during the fiscal year from non-State funds, at least 95% of which are reported to be funds from research and training grants. The total of these salaries for each of the last three years is presented below; the figures demonstrate the continuing growth of research support.

Fiscal year	Total salaries from non-State funds
1966	817,456
1967	1,136,715
1968	1,287,428

D. OTHER PROFESSIONAL ACTIVITIES OF THE FACULTY

To list all of the other professional activities of the faculty would require numerous pages and would not be very useful, yet a meaningful summary is nearly impossible because of the diversity of these activities. Members of the Art Department have exhibited locally, nationally, and internationally, and their works have been acquired for both public and private collections. Similarly the musicians presented concerts and traveled extensively throughout the state serving as clinicians and adjudicators at various schools. They have accepted invitations as guest conductors and have had their compositions performed. The most widely publicized achievement made by any member of the faculty was Professor Jules Piccus' (Romance Languages) discovery of some Leonardo da Vinci manuscripts in the National Library at Madrid.

Those members of the faculty who are editors or serve on the editorial boards of scholarly publications and those who held offices in professional societies, etc., are listed in Table 14.

It will be noted from inspection of the table that 25 members of the faculty are editors or members of the editorial boards of one or more publications in their fields. Ten scientists are members of the advisory boards of federal support programs (NSF, NASA, National Research Council) or similar agencies.

E. FELLOWSHIPS AND OTHER SPECIAL RECOGNITION ACCORDED MEMBERS OF THE FACULTY.

1. FACULTY AWARDS

The College is proud to recognize that some members of its faculty have been accorded honors for their distinguished scholarship and that others have been awarded fellowships for all or part of the academic year.

Fine and Performing Arts

Bezanson, Philip T. - Professor and Head, Music; Guggenheim Fellowship for Music Composition, June 1, 1968 to January 1, 1969

Humanities

Born, Jurgen - Associate Professor, Germanic Languages and Literatures; American Council of Learned Societies Fellowship for post-doctoral research, 1968-69

Denkler, Horst - Professor, Germanic Languages and Literatures; Fellowship, Deutsche Forschungs-Gemeinschaft

Golden, Morris - Professor, English; Guggenheim Fellowship

Greenbaum, Louis S. - Professor, History; National Institute of Health Special Fellowship for 1968-69

Haven, Richard - Associate Professor, English; National Foundation on the Arts and the Humanities Fellowship for 1967-68

Taylor, Robert E. - Professor and Head, Romance Languages and Literatures; Knighted, Ordre des Palmes Academiques

Weigand, Hermann - Professor, Germanic Languages and Literatures Knight Commander's Cross of the Federal Republic of Germany, November 17, 1967. Honorary L.H.D., University of Colorado, June 7, 1968

Weiner, Seymour S. - Professor, Romance Languages and Literature Knighted, Ordre des Palmes Academiques

Varley, H. Leland - Professor, English; Fulbright award for 1968-69 at Lorong University, West Malaysia

Social Sciences

Park, Peter - Associate Professor, Sociology; Fulbright Fellowship for research in Italy, 1968-69

Wiarda, Howard J. - Assistant Professor, Government; Summer stipend for 1968 from the National Endowment for the Humanities

Yaukey, David W. - Associate Professor, Sociology; United Nations Assignment to South America during 1968-69

Biological Sciences

Fairbairn, Donald - Professor and Head, Zoology; National Institute of Health Special Fellowship to the University of Sydney, Australia, 1968-69

Moner, John G. - Associate Professor, Zoology; National Institute of Health Special Fellowship to the University of California, 1968-69

Pfau, Charles J. - Assistant Professor, Microbiology; National Institute of Health Career Development Award

Physical Sciences

Brandts, John F. - Associate Professor, Chemistry; Alfred P. Sloan Foundation Fellowship

George, John W. - Associate Professor, Chemistry; Royal Norwegian Council for Scientific and Industrial Development Fellowship

Nostrand, Richard L. - Instructor, Geography; National Science Foundation Fellowship for summer, 1967

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2. Outstanding Teacher of the University Award

Burke, Terence - Associate Professor, Geography

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3. Faculty Growth Grant Recipients

Seventeen members of the faculty of the College were awarded Faculty Growth grants by the University to support their research, scholarly or creative work during the summer of 1968. The recipients are listed on the following page.

Bagg, Robert E., Assistant Professor of English

Berube, Paul E., Assistant Professor of Art

Biller, Henry B., Assistant Professor of Psychology

Buckley, Joseph T., Assistant Professor of Mathematics

Cathey, James E., Assistant Professor of Germanic Languages

Foster, Lawrence, Assistant Professor of Philosophy

Gallo, Ernest A., Assistant Professor of English

Goldman, Sheldon, Assistant Professor of Government

Gunderson, Gerald A., Assistant Professor of Economics

Kamil, Alan C., Assistant Professor of Psychology

Lowance, Mason I., Jr., Assistant Professor of English

Minisci, Brenda, Instructor of Art

Sicks, Jon L., Assistant Professor of Mathematics

Stroup, Dorothy, Assistant Professor of Botany

Swaim, Kathleen M., Assistant Professor of English

Tager, Jack, Assistant Professor of History

Wilson, William J., Assistant Professor of Sociology

VI MAJOR ACCOMPLISHMENTS AND SPECIAL PROGRAMS

A. COLLEGE CONSULTANTS

During the period covered by this report Dean Hunsberger, with the consent of the departments involved, brought to campus a number of consultants to advise him on the future development of the Departments of English, History, Slavic Languages and Literatures, and Biochemistry. Most of the consultants spent two days on campus and met with the departmental faculty, the Dean, and various Heads of Departments.

The English consulting team was composed of the following persons, who visited campus on the indicated dates:

Louis L. Martz, Professor of English, Yale University; September 25 and October 4, 1967.

John H. Fisher, Executive Secretary of Modern Language Association and Professor of English at New York University; September 28-29, 1967.

Hazard Adams, Professor and Chairman of English, University of California at Irvine; December 11-12, 1967.

The History consulting team, which visited campus on February 7-8, 1968, was composed of the following persons:

Henry R. Winkler, Dean of Faculty of Liberal Arts, Rutgers University

J. H. Hexter, Professor of History, Yale University

Sidney Fine, Professor of History, University of Michigan

The Slavic consultant, who visited campus on September 22-23, 1967, was H. W. Dewey, Professor of Slavic Languages and Literatures, University of Michigan.

The Biochemistry consultant was Irving M. Klotz, Professor of Chemistry, Northwestern University, who visited campus on March 14, 1968.

In addition, Warren G. Bennis, Provost of Social Sciences and Administration at the State University of New York at Buffalo, visited campus on June 6, 1968 to advise us on problems concerning the proposed restructuring of the administration of this University. He met with all department heads in the College, as well as with the Dean, Provost, and President.

These visits proved so helpful to all concerned that it is planned to continue this practice. One logical time for many visits of this kind obviously is during the early stages of a search for a new department head.

RECRUITMENT

Our recruiting efforts account for the filling of 140.8 full-time-equivalent faculty positions though 12 of these positions represent commitments which had been made for September, 1967. The details regarding rank, type of position (new vs. old) and distribution according to Departments are presented in Tables 15 and 16. Inspection of these tables will reveal that 122 full-time faculty were recruited, 29% of them at the upper two ranks. Part-time appointments account for 18.8 FTE positions.

Strenuous efforts have been required of all of the faculty, and particularly of the Department Heads, in recruiting superior persons for appointment to the faculty. For example, the Department of Physics and Astronomy alone interviewed 40 individuals on this campus in the process of appointing only six new persons to its faculty.

Vacant positions are indicated according to rank in Table 1 Of the 22 FTE vacancies, 8 of which result from resignation, death, etc., and 14 from grants of leave without pay, 13.5 are used to "back-up" stipends for graduate teaching assistants. Thus there is a total of 8.5 "effective vacancies" as of July 10, 1968.

C. REPORT OF THE CURRICULUM COMMITTEE

I During the year several general questions came to the Committee's attention. A concise summary of the Committee's recommendations follows.

A. A Department of Religious Studies

This proposal came to the Committee via the Faculty Senate. The Committee met with proponents and requested advice from all departments. This recommendation was sent to Dean Hunsberger:

> "A multidisciplinary program in Religious Studies should be developed within the College of Arts and Sciences along these lines: The program is administered by a chairman who works with a committee of at least five from related departments. The chairman should be looked upon as a department head, have a budget, help recruit faculty members who can contribute to the program in the related departments, and recommend supplementary appointments of faculty in the program. His recommendations to the Dean should include a statement of the degree of concurrence within the committee.
>
> "This recommendation is not to be interpreted as implying a sense of urgency for the full implementation of the program."

B. A proposal from the language departments to increase the class time in the elementary language courses (intermediate in French) from 3 to 4 hours per week was rejected by the Committee. The Committee's attitude was that we have no evidence that the "intermediate proficiency" level now in use is inadequate.

C. The question of interdisciplinary programs fostered by a single department arose in connection with the revision of the curricula of the Speech Department, and this recommendation was forwarded to Dean Hunsberger and Provost Tippo:

> "The Committee strongly urges that serious study be devoted to means for providing an interdisciplinary administration for interdisciplinary programs, not only in Communication Disorders but also in the various other interdisciplinary programs which we have or which we may generate Even while this study is in progress, it is also strongly urged that prospective appointees to interdisciplinary programs visit and talk with as broad as possible a range of people interested in, even though not officially connected with, the program."

D. The Committee reviewed the proposals in the report of the Curriculum Study (Cook) Committee. The reaction was favorable in all cases if "the recommendation should go farther" is interpreted as supporting the recommendation as presented. The reporting committee did not submit a counter proposal.

II. The committee also approved 86 new courses and 12 revisions of courses during the year. The new courses were concentrated in three areas.

Twenty-two new courses in the Art Department were designed to implement the B.F.A. degree program in four different media

Twenty-six of the new courses, along with the twelve revisions were in the Speech Department for the purpose of strengthening the offerings in each of four areas. These changes, in effect establish a five-fold split of speech majors into Communication Disorders (Speech and Hearing Therapy), Mass Communication, Rhetoric and Public Address, Theatre and Oral Interpretation, and Speech Education.

Eight new courses were approved for the Program of Comparative Literature. Four new courses in Italian and three in Latin represent the introduction of upper division work in these areas.

III. The committee began a comparative study of curricula which concerned both a quest for areas of instruction not currently available at the University and a comparison of the numbers of courses offered both at this University and at other institutions.

Some of the preliminary findings may be of interest; the figures are for the College of Arts and Sciences or its analogue in each case.

Institution	Year	Number of Courses	Number of Faculty	Courses per Facu
Univ. of Mass.	67-68	1355	603	2.25
Univ. of Indiana	65-66	2645	740	3.57
Univ. of Michigan	64-65	2106	890	2.37
Univ. of Wisconsin	66-68	3303	1000	3.30

D. CURRICULUM STUDY COMMITTEE

The Ad Hoc Curriculum Study Committee (Chairman: Professor LeRoy Cook of the Physics Department) submitted its report to the Dean in February. The Dean accepted the report and transmitted it to the faculty, characterizing its major contribution as "the creation of a broad and realistic foundation for a general rethinking of our curriculum at a critical stage in the growth of the College as a major unit in a rapidly expanding University".

Two of the Committee's major recommendations were first, a modification of the system under which all students must take single, specified, universally-required courses and second the establishment of a College honors program. By the end of June, 1968, suitable options were approved for English 125 and 126 and Speech 101, all three of which were universally required under the University core curriculum. In addition, other options were approved for History 100 and 101 which had previously been required of all candidates for the B.A. degree in the College. The Dean also appointed an Interim Honors Committee (chairman: Professor Everett Emerson of the English Department) to propose a detailed Honors program for the College. The Committee's report was accepted by the Dean and approved in principle by a meeting of the College faculty for submission for formal ratification by the entire faculty in the fall.

To make detailed recommendations on other curricular problems raised by the Cook Report the Dean has appointed a Committee on Foreign Language Instruction, Committee on Rhetoric in the College Curriculum (to deal with the composition and speech requirements), and an informal committee on the science/mathematics requirement. These committees are to report in the fall, particularly on the nature of future requirements in the fields for which they are responsible. Additional curricular revisions will undoubtedly be recommended in 1968-69.

The Cook Report also was the basis for extensive involvement of students in the discussion of curricular review and revision.

The College of Arts and Sciences Student Newsletter

NUMBER ONE July 10, 1968

CURRICULAR CHANGES, EFFECTIVE SEPT. 1, 1968

Three of the College's graduation requirements have been modified as detailed below. In case you wish to utilize some of these broader choices in your program for the fall semester, you may make the change at registration in Boyden gymnasium on September 10.

1. Instead of the requirement, "English 125-126 (or a special version 127-128 or 135-136)" the new requirement is a "year's study of literature in the Western Tradition." This broadens the choices of a student so that he may meet the new requirement either by English 125-126 or by any one of these pairs of courses:

English 151-152 Forms and Sources of Modern Literature: Epic and Novel.
English 153-154 Forms and Sources of Modern Literature: Drama and Lyric.
Comparative Literature 201-203 Modern European Literature.
French 161-162 Great Works in French Literature.
German 277-278 Survey of German Literature.
Italian 161-162 Introduction to Italian Literature.
Spanish 161-162 Introduction to Spanish Literature.
} Presuppose proficiency in the language

The reading lists for the English courses are printed on the back of this sheet.

2. Instead of the requirement "Speech 101," the new requirement is "Speech 101, 105, 107 or 150." The three options are new courses which emphasize aspects of speech other than public speaking practice: Speech 105 - Introduction to Rhetorical Theory, Speech 107 - Masterpieces of Public Address, Speech 150 - Process of Speech Communications.

3. Instead of the requirement History 100-101 for B.A. degree (which could be used as the humanities elective by a B.S. candidate) the new form is "A year's study of the western tradition in history or in philosophy." For next year the possible replacements for History 100-101 are any pair of these philosophy courses: Philosophy 105 - Introduction to Philosophy, Philosophy 161 - History of Ancient and Medieval Philosophy, Philosophy 162 - History of Modern Philosophy, Philosophy 201 - Plato and Aristotle, Philosophy 202 - Medieval Philosophy, Philosophy 203 - Britich Empiricism, Philosophy 204 - Continental European Philosophy.

THESE CHANGES IN GRADUATION REQUIREMENTS ARE APPLICABLE TO ALL UNDERGRADUATES IN THE COLLEGE

Issued from time to time by the office of the Dean of the College.

Each course in English will involve selected readings from the list under the appropriate course number.

125-126	151-152	153-154
Homer	The Odyssey	Greek Anthology
Sophocles	The Bible	The Bible
Dante	The Aeneid	Greek dramas
Shakespeare	Beowulf	Medieval lyrics and ballads
Moliere	The Divine Comedy	The Metaphysical Poets
Goethe	Don Quixote	Milton
Turgenev	Fielding	Burns
Melville	Austen	Wordsworth
Frost	Flaubert	Goethe
Joyce	Melville	Browning
Mann	Dosteovsky	Whitman
Shaw	Conrad	Ibsen
	Joyce	Chekov
	Faulkner	Yeats
	Camus	Frost
	Gunter Grass	Eliot
	John Barth	Auden
		Roethke
		Brecht
		Albee
		Pinter

E. ACADEMIC HONESTY COMMITTEE

During the academic year 1966-67 the University adopted a Code of Student Conduct. The establishment of a College of Arts and Sciences Committee on Academic Honesty was requested as a part of the revised judicial procedures. An interim committee made up of the Assistant and Associate Deans was formulated as an appeal board. The interim committee presented a resolution to the College Faculty which led to an enlarged committee with a broader charge.

The present membership of the committee is Professors Allen (Government), Andrews (Zoology), Robison (Philosophy), and Webb (Geology), Deans McFarland, Rollason, Saveried and Wagner, and seniors Esther Atherton and Duncan Crawford. The committee is developing a statement to the faculty concerning the philosophy of Academic Honesty, means for encouraging its acceptance in its purest form, and procedures for coping with breaches of it.

During the year, the committee has served as an appeal board in case a student feels that he has been unjustly accused or unfairly disciplined for a breach of academic honesty. Also, the chairman of the committee has forwarded recommendations for action as severe as disciplinary probation to the Discipline Board.

The committee heard one appeal and voted (3-1) that academic dishonesty had not been established beyond a reasonable doubt. Four recommendations for disciplinary probation were forwarded, and the committee was informed of three other cases in which a grade was lowered because of a breach of academic honesty.

F. SPACE READJUSTMENTS, SUMMER, 1967

Expansion space for the College for the '67-68 academic year came indirectly from the opening of the Whitmore Administration Building. Several buildings, and part of another, were reassigned to the College after the Central Administration moved into Whitmore.

South College became the quarters for Dean Hunsberger and his staff, for the Philosophy Department, for the Department of Slavic Languages and Literatures, for the Program in Comparative Literature, for the new Director of Honors, and for an overflow of TA's from the departments of English, Speech and Sociology. The basement area was divided between storage for the University Theatre and a work and storage headquarters for the Operetta Guild.

The first two floors in the east wing of Machmer, vacated by the student service offices, provided expansion space for the departments of German, Government, Sociology and Anthropology, and Music, and permitted moving the Economics Department from Draper into Machmer. There were some other reassignments of rooms within Machmer; one of them was to provide more adequate space for the Journalistic Studies program.

Some other space acquisitions should be noted. The Herdsmen's Cottage was adopted for use as an Anthropology research area. One of the Old Infirmary Buildings was used to provide teaching studios for the Music Department. Berkshire House was assigned to the Psychology Department but was not efficiently used because of the many delays in getting renovations made. (This work was not yet started on June 30th despite the urgency of its need.)

The Astrophysical Research Building was authorized and became available to the Department of Physics and Astronomy during the year.

During the course of the year, two areas were condemned and required emergency reactions. The graduate student work are on the third floor of Clark Hall had to be vacated; the students were temporarily housed in Berkshire while a large room in Marshall Hall Annex was readied for them. The use of the music practice rooms in the Tower of South College was terminated without alternate space being provided.

The moves and reassignments involved about 210 people and 125 office rooms. Over half of the persons were new arrivals on campus so that for them it was a matter of location rather than relocation.

The one embarrassing feature of the "summer shuffle" was the scarcity of suitable furnishings for the rooms. The basic plan that the furniture left behind would take care of the new occupants was overly optimistic. The College bought over $10,000 worth of supplementary furniture - files, bookcases, desks and chairs to alleviate the shortages.

G. Overseas Programs

1. THE FREIBURG PROGRAM - AN ACADEMIC YEAR IN GERMANY

In its second year of operation the Freiburg Center, directed by Professor Peter Heller (German) served a total of 26 students. Eighteen of these were graduate students and eight undergraduates. Again the majority (somewhat less than two thirds) were graduate and undergraduate German majors. The appointment of a German coordinator insured smoother and closer cooperation with the German University of Freiburg. Generally, the problems arising from the divergence of American and German systems of higher education (e.g. relating to the planning of academic programs and credit transfers) were solved in a satisfactory manner. The program, which was largely experimental in its first year, was endorsed without reservation by the German academic authorities, in its second year of operation, and the overwhelming majority of our students found the year of study abroad eminently worth while.

Professor Ferenc Vali who taught two courses in political science as a visiting Professor from U. Mass. in the Fall semester, offered a course on the problems of divided Germany which proved of considerable interest also to large numbers (80 to 100 students) from the German University of Freiburg. In the second semester, Professor Winfred Bernhard (History, U. Mass.) taught two courses in American history which, like Prof. Vali's courses, were included in the official catalogue of the German Univ. of Freiburg, - a development symptomatic of the increasing integration of the U. Mass. Center into the academic life of the Berman University. Prof. Heller offered courses in Comparative Literature.

The Center's extra curricular activities included again an extensive series of guest lectures featuring both U. Mass. faculty available in Europe and lecturers from other institutions, and culminating in a two day symposium on contemporary literature in America and Germany which attracted attention of the German press and radio, and which is scheduled to be published as a book by a German publishing firm. The lecture series and a concomitant U. Mass. exhibit clearly helped to establish the image of our University and of its German branch in the academic community and in the city of Freiburg.

Another major development was the move to spacious and impressive new quarters which should enable the Institute in the future to provide not only extensive office space but class room facilities, a reading room, and an adequate setting for social occasions. In his report Professor Heller expressed his view that the Institute could be developed to become as "an effective center for European studies not only for advanced German majors, for whom the experience of a year's study in a German academic environment is absolutely essential, but in a variety of fields which relate to the German and European setting.

Last not least, the location of Freiburg which provides easy access to Germany, France, Switzerland, Italy, etc. proved again to be particularly suitable for the establishment of an Institute which promotes the kind of international awareness and breadth of cultural perspective which are needed in an age confronted with the facts of global interdependence and with the need for a perspective beyond the limits of narrow specialization."

2. SUMMER SESSION AT BOLOGNA, ITALY
PROFESSOR LOUIS S. GREENBAUM, DIRECTOR

Fifty-six students, the majority of whom were from the University of Massachusetts, participated in the second Summer Session at Bologna, Italy, directed by Professor Louis S. Greenbaum. It was housed in the Johns Hopkins Center of Advanced International Studies in the heart of the city, ancient center of Italian art, culture and gastronomy, and home of the oldest University in the West. Liberal use was made of the artistic resources of Bologna's rich and varied museums and churches as well as the library collections of the University.

Four courses were taught: Modern Italian Literature in Translatio by Professor Paul Mankin, Department of Romance Languages at the University; European Comparative Government by Professor Gerhard Lowenberg, Department of Political Science, Mount Holyoke College; Renaissance Art by Mr. Michael Rinehart, Clark Art Institute; and History of Europe in the Age of the Baroque by Professor Louis Greenbaum, Department of History at the University.

Apart from the normal load of two courses, students also attended a non-credit conversational Italian course at the Center. To deepen their understanding of Italian life and to secure proficiency in the spoken language, students were lodged in the residences of Italian families. Faculty members frequently joined students at meal time and on weekend bus tours of Italian cities of artistic and historical interest--Rome, Florence, Siena, Venice, Ravenna, Padua and the famous opera in the Roman Coliseum at Verona.

With the Italo-American Association of Bologna our Summer School co-hosted a concert by the late pianist Howard Lebow of the Department of Music of the University. After an evening of superb music, students and faculty arranged a reception in honor of Mr. Lebow and our friends in Bologna and the Hopkins Center.

3. OXFORD SUMMER SEMINAR-1967
PROF. ERNEST H. HOFER, DIRECTOR

The University of Massachusetts-sponsored Oxford Summer Seminar convened again in St. Hilda's College under the direction of Professor Ernest H. Hofer. The dates were July 4 to August 15, 1967. Five

undergraduate and five graduate courses were offered, all taught by English dons--including two ex-Oxonians who returned to renew their Massachusetts association. (Details of courses and dons are attached herewith.) In addition, the Seminar again engaged the services of distinguished visitors. The practice, as at most Oxford colleges in term time, was to welcome the visitor at special dinner--then to gather in a separate hall to hear his lecture. Then those who wished further discussion were invited to meet the speaker individually. The biggest shock for students was the appearance of J.I.M. Stewart, for most had read his mystery stories under the name of Michael Innes. The fact that he has written a book on Shakespeare and the modern volume of the Oxford History of Literature convinced them that don can be an "all-round man".

Again, in short, the Seminar tried to combine the intellectual with the getting-acquainted--with England, with personalities, with habits and style and even sports. The World Cup, Wimbleton, numbered members of the Seminar in the audience--as did the Gilbert and Sullivan Festival in Oxford annually Sponsored by D'Oyle Carte. All members of the seminar journeyed to Covent Garden for Don Giovanni and to Stratford on Avon for Coriolanus. They visited Salisbury, Coventry for the new cathedral, and a production of miracle plays in the shell of the old cathedral; they saw Stonhenge, and Hatfield House; Henley; the sights of London. Every student was sworn in as a Reader of the Bodleian Library.

The Seminar Numbered 100 students, fifty graduate, fifty undergraduate. Six others also attended--as counselors or assistants to the director. About sixty percent of the group came directly from the Univ. of Mass. or had had previous association at Amherst. Smith sent nine girls; Mt. Holyoke three; Amherst one. Outside the 5-college area the program listed thirty-three other colleges and universities, including Berkeley, the Univ. of Washington, Radcliffe, Dartmouth, Barnard, State University of Oklahoma, Florida, Wesleyan, the Mt. Hermon School, Hamilton, Yale, Douglass, etc. This second year the entrance requirements were stepped up: no student was allowed to participate with an average below "B" and each student had a minimum of fifteen hours of English courses. Some of the papers submitted, claimed one don, were the best he had seen from American students. Every don volunteered to teach again in 1968. The continuity thus established tends to make the teaching side of the program improve with each year. As for the college itself, St. Hilda's was delighted with the 1967 group. For the first time in a century they opened the gates after midnight because they trusted us. The Vice Principal gave a small reception for the Seminar; the Master of Balliol gave a large evening reception for the Seminar, numbering 40 students from England, 40 from the Seminar. All faculty participated in the final dinner-ball at the former hunting lodge of Henry VIII, now owned by Mr. and Mrs. John Tilley.

Still, the main value academically of the Seminar is the trans-

planting of Massachusetts courses to Oxford soil, with Oxford dons officiating. We use young, dynamic dons and their love of learning as well as their very human qualities impress students greatly. The "place" is a fertile ground for the growing and even re-assessing of masters' and doctoral dissertations.

4. MADRID GRADUATE SUMMER SEMINAR, 1967

In the summer of 1967 the University of Massachusetts established its Seminar in Madrid, which was unusual among summer programs in that it gave special emphasis to the needs of graduate students. The core of the offerings was made up of three seminars:

The Evolution of Spanish Philological Studies in the 15th and 16 Centuries, taught by Professor Carlos Claveria.

Sixteenth-Century Spanish Lyric Poetry, taught by Professor Damaso Alonso.

Medieval Spanish Epic Poetry, taught by Professor Elias L. Rivers.

There were in addition courses in the History of Spanish Painting and Contemporary Spanish Culture, under the direction of Professors Jose-Luis A. Misol and Jaime Ferran, respectively.

Two group tours to places of historical, literary, and artistic interest were part of the summer program. Professor German Bleiberg, who planned and directed the 1967 Seminar, accompanied the students on the two tours.

The location in Madrid was Miguel Angel 8, the building of the International Institute for Girls in Spain. The University shared space there, and also a lecture series, with Bryn Mawr College. Students were housed with Madrid families selected by the Director.

At the end of the summer,planning began for a 1968 program with several of the same features, but with certain changes based on the first experience. Significant among these is an enlarged opportunity for undergraduate participation while at the same time there will continue to be seminars exclusively for graduates.

H. INSTITUTES

(1) Summer NDEA Institute for Advanced Study in English

A six-week Institute for Advanced Study in English, funded by the United States Office of Education as authorized under Title 11 of the National Defense Education Act, was conducted on campus for the second consecutive summer. Participants were forty-four experienced secondary school teachers of English, twenty of whom were teachers in Massachusetts schools. Courses were offered in three areas. A composition course defined some of the problems of teaching writing and introduced materials from science and literature as a means of increasing the logical coherence and interest of composition assignments. A poetry course combined a historical approach with a close reading of individual poems by nature poets, especially those poems most appropriate to high school students. A criticism course presented the essential principles and problems of literary criticism, guided participants' reading of several novels, plays and stories in the light of these methods and helped develop their ability to select the most effective approaches to particular works. Dr. Richard O. Ulin directed the Institute, the faculty of which contained the following members of the University of Massachusetts English Department: Dr. Robert E. Bagg, Assist- and Director; Mr. Charles S. Adams; Mr. Charles K. Smith; Dr. W. Bernard Fleischmann, and Dr. Leon O. Barron. Also on the staff were Dr. Maurianne S. Adams and Dr. Joan Bramwell of Smith College and Dr. Martin Halpern of Brandeis University. Guest lecturers during the summer were Walker Gibson, then of New York University and now on our faculty, and C. L. Barber, University of Buffalo.

(2) NDEA Overseas Institute for Advanced Study for French Teachers

Stowell C. Goding directed a most successful NDEA Institute in Arcachon, France, June 15 to August 16, 1967. This was a new venture in NDEA Institutes as the primary purpose of this Institute was the identification and special training of secondary school teachers of French for potential leadership in the teaching profession. Announcement of the Institute attracted 850 inquiries; 54 participants from 25 states were selected.

(3) NDEA Institute in History

An NDEA Institute for high school teachers of History was held from June 23 through August 11, 1967 under the direction of Professor Dean Albertson. The budget of $97,000.00 provided the 53 teachers who attended with a distinguished interdisciplinary faculty.

The Visiting Lecturers were:

Kai T. Erikson, Professor of Sociology, Yale University
Edwin Fenton, Professor of History, Carnegie Institute of Technology

John Hope Franklin, Professor of History, University of Chicago
Paul Glass, Professor of Music, Brooklyn College
Jack P. Greene, Professor of History, Johns Hopkins University
Allen Guttmann, Professor of English, Amherst College
William H. Harbaugh, Professor of History, University of Virginia
Melvin Kranzberg, Professor of History, Case Institute of Technology
Eric Lampard, Professor of History, University of Wisconsin
Oliver W. Larkin, Professor Emeritus of Art, Smith College
James T. Lemon, Professor of Geography, University of California at Los Angeles
Seymour J. Mandelbaum, Professor of History, University of Pennsylvania
Arthur Mann, Professor of History, University of Chicago
Douglas R. McManis, Professor of Geography, Teachers College, Columbia University
Russel B. Nye, Professor of English, Michigan State University
Maurice R. Stein, Professor of Sociology, Brandeis University

The Institute was designed to present the most recent interpretations of American history from 1607 to the present in an "American Studies," audio-visual approach. Six major topics of study were:

The Coming of the American 1607-1789

The Molding of the American 1789-1850

The Negro American and Southern Nationality 1850-1876

The Revolutions of the Gilded Age 1876-1890

Populists, Progressives and American Innocence 1890-1920

The American Search for Maturity 1920-1967

A similar Institute will be held during the summer of 1968.

(4) Summer Russian Institute, 1967

A Summer Russian Institute under the direction of Professor Jack A. Posin, assisted by Professor I. I. Baloueff of Mount Holyoke College, was held at the University from June 21 to September 1, 1967. It consisted of an intensive Russian-language course with emphasis on grammatical study of the Russian language as the most important -- within the peculiar

features of the language -- and the most lasting aspects of the study.

The 16 participants accomplished within the ten weeks an amount of study comparable to that of more than three semesters of regular study.

(5) Summer Research Participation in Zoology (Sponsored by NSF)

During the summer of 1967, 4 college teachers, 3 high school teachers and 10 undergraduates were engaged in full time research projects in the Zoology Department. They were supported by three grants from the National Science Foundation totaling $28,300. College teachers came from Notre Dame College (Staten Island, N.Y.); Johnson State College (Vermont); Our Lady of the Elms College (Chicopee, Mass.) and California State Polytechnic College (San Luis Obispo); High school teachers were from Rochester, N.Y.; McAllen, Texas; and La Habra, California. All undergraduates were majors in our own Zoology Department. Ten members of the Zoology faculty served as Research Advisers to the 17 participants. All programs were under the direction of Professor L. M. Bartlett.

I. Department of Music -- Progress Toward Accreditation

The Commission on Curricula and the Graduate Commission of the National Association of Schools of Music approved, subject to ratification by the Executive Committee and the membership of the Association at its November 1968 Annual Meeting, the application for Associate Membership of the Department of Music with the following degrees:

Bachelor of Arts in Music History; Theory and Composition; Performance.

Bachelor of Music in Performance; Theory and Composition; Music Education.

Master of Music in Theory and Composition; Musicology; Performance; Music Education.

Acceptance for membership in the Association constitutes national recognition of a program of high quality in the Department of Music. Professor Philip T. Bezanson, Head of the Department, is to be congratulated for his success in recruiting persons of outstanding ability to his faculty, and I am appreciative of the efforts and dedication of his staff in developing within a period of only four years a program which compares favorably with those in the best schools of music in the country.

COLLEGE OF ARTS AND SCIENCES

SECTION VII

OF

ANNUAL REPORT

July 1, 1967 - June 30, 1968

FUTURE PLANS AND NEEDS

Having carefully reviewed Section VII of last year's Annual Report, I am pleased to note (for the third consecutive year) the number of "plans" which have been executed in full or in part and the number of "needs" which have been fulfilled in full or in part. For each of these accomplishments I am indebted to the members of my staff for valuable help and to the Provost for his sensitivity to important academic needs.

The recently-discussed proposal for restructuring the administration of this University holds the promise of providing us with the type of administrative apparatus needed to ensure a very bright future if we are able to increase our "support" budget and if our plans for expansion in enrollment are properly coordinated with our capital outlay budget.

Successful resolution of these matters will hasten the fulfillment of Polykarp Kusch's prediction (quoted in last year's Annual Report): "I have no doubt that....the University of Massachusetts at Amherst will turn out to be institutions of excellence by any criterion."

A. GENERAL CONSIDERATIONS

1. Administrative Reorganization.

(a) It is my strong belief that this University's #1 priority for 1968-69 should be discussion, planning, and implementation of an appropriate refinement of the recently proposed general scheme for restructuring our administration. The idea of having 4 to 6 Provosts is greatly superior to the mere mechanical fragmentation of Arts and Sciences into several traditional "divisions". This scheme would produce administrative units of manageable size, while at the same time the "pure" and "applied" aspects of a broad academic area would be unified under one administrative officer (Provost). Furthermore, the proposed structure could easily accommodate a total University enrollment of 30,000 students.

(b) This might be an appropriate time to suggest that certain other functions of the university be decentralized. For example, some personnel currently in the Dean of Students' office might be assigned to each Provost. A similar decentralization of at least certain business functions of the University should also be considered. Such decentralization undoubtedly would make non-academic personnel more sensitive to academic needs and might actually increase our efficiency as we grow larger. Finally, many of the functions of the Graduate School also could be spread among the various Provosts.

2. NEED FOR GREATER AUTONOMY. (a) We are hurting badly because non-professional personnel are still under the State civil service system. The objectionable aspects of this system become especially painful in years (like the present) in which we have not been assigned nearly enough new secretarial positions. What we need most of all is a merit system for salary increases for non-professional personnel. On August 2, 1968 our office was crippled by the loss of an excellent secretary (Mrs. Caldwell) to Amherst College. We were powerless to do anything to keep her here when she was offered a much higher salary at Amherst.

During 1967-68 our departments were forced to use considerable amounts of 03 money to hire sorely-needed secretaries, and this undesirable practice undoubtedly will have to be continued during 1968-69 or until such time as our College is assigned sufficient secretarial positions. Faculty morale is deteriorating because of insufficient secretarial help.

(b) For the fourth consecutive year I wish to repeat:

"A COLLEGE AS LARGE AS OURS SHOULD HAVE FREEDOM - WITHIN PRECISELY DEFINED LIMITS - TO TRANSFER MONEY FROM ONE ACCOUNT TO THE OTHER. THIS MIGHT BE ACCOMPLISHED BY REQUESTING SUCH PERMISSION FROM THE TRUSTEES AT THE TIME THE BUDGET FOR A GIVEN YEAR IS APPROVED. FOR EXAMPLE, ADVANCE PERMISSION TO TRANSFER UP TO 10% OF THE ALLOCATED FUNDS WOULD BE EXTREMELY DESIRABLE. I CANNOT SEE THAT SUCH A POLICY WOULD VIOLATE EITHER THE LETTER OR THE SPIRIT OF EXISTING AUTONOMY LEGISLATION."

(c) The extension of "autonomy" to the building program of the University would be especially desirable now that we have such an eminently capable Planning Officer (Mr. Jack Littlefield). The improvements he has effected in every phase of our capital outlay and planning program have been nothing short of remarkable. Largely because of his efforts, the time our office currently has to spend on such matters has been greatly reduced. For the first time in my 8 years on campus I can now say that the University's capital outlay planning program is in close touch with academic needs.

3. BUSINESS OPERATIONS. I have been assured that for 1968-69 no faculty salaries will be charged to our 03 account! If this turns out to be true, one of my long-standing complaints will have been removed.

We sorely need an improved procedure for preparing the University budget. For several years I have recommended the adoption of a "formula" approach. Outside consultants could be used with profit in this area, but they should be asked to thoroughly review all aspects of the so-called "service" departments. The processing of travel vouchers continues to involve unnecessary red tape, and the traveler has to wait too long for reimbursement.

4. I have been especially pleased with the results of the meetings between the Provost and the department heads in our College. I hope these meetings will be continued during the coming year. Among the issues remaining to be resolved for the 1968-69 recruiting season is the extent to which the Dean should have authority for approving offers to non-tenured faculty members (or at least to assistant professors).

5. SUMMER SCHOOL. I note with pleasure that for the first time the University has made money available for administration of departments during the summer of 1968. My first written recommendation to this effect was made on November 7, 1962!

I have never understood the rationale for running summer school by a different administrative and financial mechanism than is used for the two "regular" semesters. AS SUMMER ENROLLMENTS INCREASE, THE SUMMER SCHOOL BECOMES A MORE SERIOUS DRAIN ON OUR "SUPPORT" BUDGET. Summer school students require expenditures from Accounts 12, 13, 14, 15, and 16, yet the only budget allocated is for faculty salaries (03). Each year we continue to operate on this basis we make it more difficult to effect a change. We get hit particularly hard in lean budget years such as we have had ever since FY 1967. I would hope that a reorganization of our summer school might be incorporated with the plan for restructuring the entire administrative apparatus of the University.

6. "SUPPORT" BUDGET. (a) I am weary of composing statements about our poor budgets in recent years! Suffice it to say that the decline in our budget allocations offers a serious hazard to approval of any Science Development Grant proposal which we may submit to the NSF.

(b) As mentioned in last year's report, we need - above all - "an honest-to-goodness 'Set 'Em Up in Business' (SEUIB) fund" if we are to continue to increase the caliber of our new faculty. In the absence of special appropriations from the legislature, I believe that an SEUIB fund should be created in each College (or perhaps each department) by rebating a fraction of the overhead on research grants. If we do not do something like this, we are in danger of starving the goose which has been laying golden eggs.

(c) IT IS ALARMING TO REALIZE THAT FOR 1968-69 WE HAVE BEEN TOLD NOT TO EXPECT A SINGLE NEW NON-PROFESSIONAL POSITION, EVEN THOUGH WE WILL HAVE ADDED 63 NEW FACULTY MEMBERS FOR SEPTEMBER 1968 AND WE WILL BE TEACHING SOME 18,000 MORE SCH THAN LAST YEAR!!

(d) It is extremely unfortunate that a College as large as ours has not a single cent of trust funds to assign flexibly to various departments and to specific faculty members to support worthwhile special projects. There is considerable academic justification for the claim that at least some fraction of the University's trust funds should be allocated to the various Schools and Colleges. It is very difficult for our office to keep track of support our departments and our faculty members receive from trust funds administered by the Graduate School. Considerations of this kind are particularly important in lean budget years.

(e) Budget for Debate. It is my considered opinion that debate should operate from a trust fund composed of funds from 3 sources: Student Senate, Department of Speech, and University. This arrangement would circumvent troubles such as those which developed during the past year. At any rate, this problem must be solved in one way or another in the very near future.

7. SUPPORT FOR GRADUATE STUDENTS. (a) Now that most graduate schools are requiring some teaching of virtually all candidates for the Ph.D., more and more science departments at the better universities are "pooling" all funds (from research grants, fellowships, and teaching assistantships) for support of graduate students and specifying that each Ph.D candidate will spend specified amounts of time performing teaching, research, and--in some cases--other services. A ceiling in terms of years of guaranteed support also is specified. I believe this University should investigate the above possibilities.

(b) Since only the science (and--to some extent--social science) departments can attract outside money for research assistants, the Ph.D. programs of those non-science departments which have only limited need for TA's are being severely paralyzed by the unavailability of University money for research assistantships. Such research assistantships represent a high-priority need of our College.

(c) Actually, it would be desirable to allocate a sum of money to each department and to let the department decide how much is to be used for TA's and how much for research assistants.*

8. I am willing to let a decision on the ultimate location of our Statistics faculty await the implementation of the proposed administrative restructuring of the University.

9. The decision of the trustees to stop their review of individual new course proposals can only be applauded. We are pleased to continue to submit such proposals to the Provost, but I do hope the number of copies required will be greatly reduced.

B. PERSONNEL

1. FOUR- AND FIVE-YEAR APPOINTMENTS. I strongly recommend that Trustee approval be sought for permitting the University to offer appointment or reappointment terms of four and of five years to certain faculty. I do not think that an occasional term of 4 or 5 years should require special action by the Trustees; rather it should be within the power of the University administration. For

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* The essence of this and the preceding two paragraphs appeared in each of the last two Annual Reports.

example, a person who comes to us after 6 years as an Assistant Professor at an Ivy League school should be entitled to a four-year term appointment because in some cases he had just completed a 3-year, 4-year, or even 5-year contract at his former institution. Furthermore, a new faculty member who is appointed as an Associate Professor after many years of research experience but no formal teaching experience may wish to insist on a 5-year contract if we do not (as would ordinarily be the case) offer him tenure on appointment.

2. NEW DEPARTMENT HEADS AND "OVER-SCALE" APPOINTMENTS. (a) Major attention during the coming year must be given to recruitment of Department Heads in English, History, Slavic, Anthropology, and - if possible - Spanish. We also hope to appoint a new Department Head in Biochemistry who would not arrive on campus until September of 1970. In filling these positions - plus the Chairmanship of Asian Studies and the possible appointment of Hans Speier - we certainly shall need at least two or three "over-scale" salaries. I wish to emphasize two points: (i) the need to raise the "over-scale maximum" from $30,000 to $35,000, and (ii) the need to obtain legislative authorization to increase the number of "over-scale" positions from 1% to at least 2%.

(b) As mentioned in the last three Annual Reports, "THE GREATEST PERSONNEL NEED OF OUR COLLEGE IS FOR MORE SENIOR FACULTY WHO HAVE HAD EXTENSIVE EXPERIENCE IN TRAINING PH.D. STUDENTS AT FIRST-RATE INSTITUTIONS. WITHOUT SUCH FACULTY IT IS UNREASONABLE TO EXPECT NEWLY-ESTABLISHED PH.D. PROGRAMS TO APPROACH DISTINCTION." We plan to continue to encourage the use of "pyramidal offers"--described in last year's report--along with "over-scale" salaries to attract such faculty. However, we cannot continue to mortgage our Account 15 allocation to create an SEUIB fund for new faculty.

3. MOVING EXPENSES. During the past year some moving expenses of a significant number of new faculty were paid by the University, thus improving on a trend started the year before. This laudatory trend should continue to be expanded until moving expenses are paid for all new faculty at the rank of assistant professor and above. Here again, a formula approach - such as used by the University of California - could usefully be incorporated into the budget as a recurring item.

I could better assess individual requests for payment of moving expenses if I had a certain amount of money assigned in advance to the College for that purpose. Some thought should be given to a general policy statement covering this area so that the limited funds for moving expenses are distributed as equitably as possible.

4. "In my (eight) years on this campus I have never seen the manning table of the University with respect to non-professional positions. What I specifically desire is a list of all non-professional titles and grades" currently in use at the University.

5. STAFF ASSISTANTS AND STAFF ASSOCIATES (a) My memo of October 6, 1967 summarized our most desperate needs in this category in specific terms. During the past year we did obtain a Staff Assistant (Miss R. Stampfel) for Mathematics, which was accepted in lieu of the Grade 7 secretary we had guaranteed Professor Stone and in lieu of any additional secretarial help for that year. We had been trying to attract Miss Stampfel to this campus ever since the Spring of 1965.

(b) We desperately need a staff assistant for Psychology. This department has been paying Mrs. Thayer out of 03 funds for the past year, and it is imperative that she be appointed to a regular staff assistantship. Dr. Appley has repeatedly emphasized the urgency of this appointment. I also feel "on the spot" because, prior to Dr. Appley's acceptance of our offer, I told him I would do everything in my power to obtain a staff assistant position for him. This department is one of our most active in research; by any criterion, their need for a staff assistant is urgent.

(c) The coming year (1968-69) will be R. L. Gray's seventh year of service as Instructor of Physics. We must notify him by September 15, 1968 of his status following the end of his current contract. We will not recommend him for academic tenure, but the Physics Department wishes to keep him on as a Staff Associate, a position for which he has ideal qualifications. This request has been on file in your office since May 16, 1967.

(d) The Staff Assistant originally assigned to English was transferred to Zoology (with the permission of the English Department) shortly after Professor Brogan resigned as Head of English. It is a matter of conscience to make certain that a Staff Assistant is now assigned to English, since we cannot take away the one from Zoology. A new Head of English would be downright foolish to accept an appointment without the guarantee of such a position. A similar statement could be made concerning the Headship in History.

(e) It is no exaggeration to state that very soon each department in our College should have at least one Staff Assistant, and the larger ones should have 2 or 3 such positions. Please remember that our smallest department (Biochemistry) now has 6.5 faculty, our largest department (English) has 90 faculty, and our median-size department has 27 faculty. Departments of this size simply must have more administrative help for the Head of Department.

(f) The competition for Staff Assistants is so keen that Professor Cox submitted to me on June 14 a complete dossier and "offer form" backing up his request to appoint Mr. K. Anderson as Staff Assistant in Microbiology, effective on September 1, 1969.

I have not submitted this to you because the Staff Assistantship for Mrs. Thayer (Psychology) and the Staff Associateship for Mr. Gray (Physics) must take precedence.

(g) It would be greatly appreciated if an allocation of Staff Assistant positions to the College could be made at a certain regular time each year. The current system frays everyone's nerves and results in repeated justifications for a given position. It will be very difficult to live with certain department heads if the backlog of needs for staff assistant positions is not cleared away very soon. I would be willing to sacrifice $20,000 from our College's new allocation of money for faculty salary increases if we could use that money to finance two staff assistantships.

C. FACILITIES

1. NEW BUILDINGS. (a) The exceptionally rapid progress made on the sorely needed new library has been most gratifying to me. Action of this kind should greatly facilitate our search for outstanding faculty particularly in the Humanities and Social Sciences.

(b) The successful campaign to increase the scope of the planned new Life Sciences Building can only be applauded. The decisions to assign the second and third towers of the Graduate Research Center to Mathematics and to assign the hitherto only vaguely-planned north area of the Graduate Research Center to Physics deserve similar commendation. Decisions of this kind clearly rate among the best-informed actions taken by this University in the past 8 years.

(c) Despite the initial set-back, I am encouraged by recent happenings to believe that the University will exert maximum effort to obtain the town of Amherst's agreement to relocate North Pleasant Street so that it will not cut through the University campus. Such a decision is essential if the new Life Sciences Building is to be attached to the western face of the Morrill Science Center. The Kling firm has presented compelling arguments that this is the best location. Furthermore, unless North Pleasant Street is relocated, the University will lose other prime building areas in the heart of the campus.

(d) Several interrelated decisions still remain to be made to capitalize on the excellent decisions mentioned in section (b) above (see my memo of July 1, 1968): (i) Geology should be moved to Hasbrouck when Physics moves to the Graduate Research Center; this will necessitate some renovation of Hasbrouck and some renovation of the Geology space in Morrill; if Geology moves out of Morrill, Entomology and Plant Pathology can be accommodated in the new Life Sciences Building. (ii) Room 129 in Morrill should be renovated for use by Biochemistry no later than September 1969.

(iii) About 15,000 square feet of the Chemistry tower should be earmarked for use by Biochemistry until completion of the new Life Sciences Building.

(e) In September of 1965 I predicted that neither Machmer Tower nor Bartlett East would be ready for occupancy until September of 1969. The progress made on Machmer Tower has been most heartening; at this writing it looks as if the Tower will be ready for use by September of 1968. I stand ready and eager to pay off all bets that I thereby lose. My hearty congratulations are extended to all concerned.

It seems certain that Bartlett East will not be ready for occupancy even by February of 1969. However, as soon as possible I would appreciate receiving an informed estimate of the occupancy date that can reasonably be expected.

With the completion of Machmer Tower for September 1968 and Bartlett East for September 1969 we have the prospect of having enough space to accommodate the projected enrollment increase for September of 1969. It is bitterly ironic that the prospect of insufficient operating funds may still necessitate a cutback in the projected enrollment for September 1969.

(f) We are gratified that the funds to complete the working drawings of the Fine Arts Building were appropriated for FY 1969. We shall do everything possible to facilitate this work so that we will be ready to use the construction funds to be requested for FY 1970.

2. Completion of Section IV of Morrill. While considerable progress toward completion of this building was made during the past year, some items still remain to be completed. The delays and inconveniences which departments have suffered since this building was occupied are shameful and inexcusable. The entire history of this project is a blot on our record. Recently Professor Cox (see his memo of July 31) has summarized what remains to be done in Microbiology.

3. The decision to build a greenhouse for Professor Harvey's research in Zoology is noted with pleasure.

D. EQUIPMENT AND SUPPLIES

1. SEUIB FUND. This very important aspect of the budget needs a real "shot in the arm". Recently I have received very serious complaints about the extent to which I have "mortgaged" our equipment money in order to provide equipment funds for new faculty. I do not believe this "mortgaging" procedure should be continued. Instead, as mentioned earlier in this report, a real

SEUIB fund should be created from rebates on overhead monies earned by research grants. It is essential to continue to offer "seed money" to new faculty, but it is equally essential that "regular" budget allocations not be "mortgaged". A short-range solution to this dilemma must be found during the next month or two. The obvious long-range solution is to obtain special appropriations for equipment from the legislature.

2. For the second straight year our total allocations per SCH in Accounts 03 through 16 has declined drastically. The figure for FY 1969 ($4.86) is lower than the corresponding figure ($4.97) for FY 1966. Since these figures do not reflect inflation, the actual decline is greater than that indicated above. It is particularly unfortunate that this decline has occurred simultaneously with a decline in federal funds in support of research. We must reluctantly admit that our growth in quality cannot continue in the face of such budgetary cutbacks. The effect of these cutbacks on our NSF Science Development Grant proposals may be extremely unfavorable.

3. We have never made a massive appropriation of money for supplies and equipment to permit out Chemistry stockroom to operate as a stockroom in a major university department should. During recent years the reserves in this Stockroom have been reduced to essentially zero each year. This situation has a serious eroding effect on a chemist's research productivity and on the training of students, not to mention the equally deleterious effect on both faculty and student morale.

4. The Speech Department wishes to encourage experimental research in speech science. A special allocation of $50,000 would be needed to get even a modest start in this field. Such developments simply cannot occur until our budgets show a marked improvement.

E. CONCLUDING REMARKS

Much of any success this College has enjoyed during recent years is attributable to the hard work of our many fine department heads and to the unusually effective cooperation of Deans Wagner and Rollason. Vice-Dean Maki, who joined our office in July 1, 1967, has provided assistance that has been indispensable. It is both a pleasure and an honor to acknowledge my indebtedness to all of these persons.

As I said in the last two Annual Reports, it continues to be most heartening to report to a Provost whose integrity is beyond question and whose keen assessment of academic priorities is unparalleled in my experience. During the past year I particularly appreciated the the perceptive interest he exhibited in a number of problems aired in several meetings with our department heads. He enjoys the only secure basis of academic authority, namely the sincere professional respect of us all.

APPENDIX A

TABLE 1: PROFESSIONAL POSITIONS (FTE) FILLED BY RANK

FALL SEMESTER

	1965	1966	1967
(a) Administration			
Dean	1	1	1
Vice-Dean	0	0	1
Associate Dean	1	1	1
Assistant Deans	2 1/2	2 1/2	2
Totals	4 1/2	4 1/2	5
(b) Faculty			
Professors	93 1/2 (20.7%)	117 (22.0%)	123 (20.3%)
Assoc. Prof.	82 (18.2%)	94 (17.7%)	125 (20.6%)
Asst. Prof.	175 1/4 (38.9%)	213 1/2 (40.2%)	238 1/4 (39.3%)
Instructors	100 3/4 (22.2%)	93 1/4 (17.3%)	103 (17.0%)
Lecturers	0	14 3/4 (2.8%)	16 3/4 (2.8%)
Totals	451 1/2[1]	532 1/2[2]	606
(c) Non-Teaching			
Staff Associates	1	1	1
Staff Assistants	3	7	7
Professional Tech.	0	1	1
Totals	4	9	9
(d) Teaching Assistants[3]	341	353	408 1/4
(e) Postdoctoral Research Associates (Not on State funds)			
Biochemistry	0	0	3
Botany	0	0	1
Chemistry	8	11	7
Mathematics	0	0	1
Microbiology	0	0	1
Physics	0	2	4
Sociology	1	2	1
Zoology	7	14	8
Totals	16	29	26

Footnotes

(1) There were 10 unfilled faculty positions, giving a total of 461 1/2 faculty positions (FTE).

(2) There were 1 5/6 unfilled faculty positions, giving a total of 533 1/3 faculty positions (FTE).

(3) This FTE figure was obtained by dividing the total allocation for TA's by the budgeted average stipend. The appropriate amounts were: 1965 - $750,200 allocated; average stipend $2,200.
1966 - $847,200 allocated; average stipend $2,400.
1967 $1,102,350 allocated; average stipend $2,700.

TABLE 2: FACULTY POSITIONS (FTE) FILLED BY DIVISION, DEPARTMENT, AND RANK: FALL SEMESTER

The number of positions of Professor, Associate Professor, Assistant Professor, Instructor and Lecturer, respectively, and the total number of positions in each department, are indicated by the series of numbers in each column. Lecturers were not separately listed in 1965; most were included with the Instructors.

	1965					1966						1967					
Fine Arts																	
Art	3	- 2	- 4	- 5	=14	3	- 2	- 6	- 6	- 1	=18	3	- 3	- 8	- 4	- 1	=19
Music	3	- 2	- 3	- 2	=10	3	- 2	- 7	- 2	- 0	=14	3	- 2	- 8	- 4	- 0	=17
Speech	2	- 1	- 9	- 9	=21	3	- 2	-12	-11	- 0	=28	4	- 2	-16	-13	- 0	=35
TOTALS	8	- 5	-16	-16	=45	9	- 6	-25	-19	- 1	=60	10	- 7	-32	-21	- 1	=71
Humanities																	
English	14.5	-16	-19.5	-14	=64	16	-16	-27	- 6	- 9	=74	17	-20	-33.6	- 7	- 7.4	=85
Germanic Lang.	3	- 1	- 7	- 9	=20	6	- 0	- 6	- 8	- 0	=20	5	- 5	- 4	-10	- 0	=24
History	7	- 4	-15	- 9	=35	8	- 5	-19	-10	- .5	=42.5	8	- 7	-20	-10	- .8	=45.8
Philosophy	1	- 1	- 3	- 1	= 6	2	- 3	- 4	- 1	- 0	=10	2	- 5	- 5	- 0	- 0	=12
Rom. Lang.	5	- 9	- 8	-14	=36	8	-12	- 9	-15	- 0	=44	7	- 9	-13	-20	- 0	=49
Slavic Lang.	0	- 0	- 0	- 0	= 0	1	- 1	- 1	- 1	- 2	= 6	1	- 1	- 1	- 1	- 2	= 6
TOTALS	30.5	-31	-52.5	-47	=161	41	-37	-66	-41	-11.5	=196.5	40	-47	-76.6	-48	- 9.12	=221.8
Social Sciences																	
Economics	5	- 1	- 3	- 8	=17	5	- 1	- 4	- 7	- 0	=17	6	- 4	- 7	- 6	- 0	=23
Government	7	- 6	- 9	- 4	=26	8	- 5	-10	- 3	- 0	=26	9	- 5	- 9	- 3	- 0	=26
Psychology	6	- 1	-13.25	- 1	=21.25	7	- 2	-14	- 0	- 0	=23	6	- 3	-15	- 0	- 0	=24
Soc-Anth	5	- 2	-11	- 1	=19	6	- 2	-11	- 1	- 0	=20	8	- 6	-10	- 2	- 0	=26
TOTALS	23	-10	-36.25	-14	=83.25	26	-10	-39	-11	- 0	=86	29	-18	-41	-11	- 0	=99
Biological Sciences																	
Botany	3	- 5	- 4.75	- .5	=13.25	4	- 5	- 4.75	- .5	- 0	=17.25	3	- 5	- 8.7	- 1	- 0	=17.7
Microbio	1	- 0	- 6	- 1	= 7	2	- 0	- 6	- 0	- 0	= 8	2	- 2	- 3	- 0	- 0	= 7
Zoology	7	- 6	- 6	- 4	=23	7	- 6	-10	- 3	- 0	=26	8	- 4	-14	- 1	- 0	=27
TOTALS	11	-11	-16.75	- 5.5	=43.25	13	-11	-23.75	- 3.5	- 0	=51.25	13	-11	-25.7	- 2	- 0	=51.7

TABLE 2: FACULTY POSITIONS (FTE) FILLED BY DIVISION, DEPARTMENT, AND RANK: FALL SEMESTER

(continued)

	1965	1966	1967
Physical Sciences			
Astronomy	0 - 1- 1 - 0 = 2		
Biochem.		1- 3- 1 - 0 - 0 = 5	1- 3- 1 - 0- 0 = 5
Chemistry	7 - 6 -16 - 6.5 = 35.5	8- 6- 14 - 7 - 0 = 35	9- 7- 14 - 6- 0 = 36
Geol-Geog.	2 - 5 - 4 - 1 = 12	2- 5- 4 - 2 - 0 = 13	2- 7- 5 - 3- 0 = 17
Physics-Astron.	4 - 5 -12 - 1 = 22	5- 9- 16 - 1 - 0 = 31	6- 12- 19 - 1- 0 = 38
TOTALS	13 -17 -33 - 8.5 = 71.5	16-23- 35 -10 - 0 = 84	18- 29- 39 - 10- 0 = 96
Mathematics and Statistics			
Math.	7 - 8 -18.75- 10 = 43.75	9- 7- 22.75- 7 - 2.25= 48	10- 12- 21 - 9- 5.5= 57.5
Stat.	1 - 0 - 2 - 0 = 3	1- 0- 2 - 1 - 0 = 4	1- 0- 1 - 0- 0 = 2
TOTALS	8 - 8 -20.75- 10 = 46.75	10- 7- 24.75- 8 - 2.25= 52	11- 12- 22 - 9- 5.5= 59.5
Interdepartmental Programs			
Asian Studies		1- 0- 0 - 0 - 0 = 1	
Chinese	0 - 0 - 0 - .5 = .5	0- 0- 0 - .5 - 0 = .5	
Japanese	0 - 0 - 0 - .25= .25	0- 0- 0 - .25- 0 = .25	
Comp. Lit.		1- 0- 0 - 0 - 0 = 1	1- 0- 0 - 1- 0 = 2
TOTALS	0 - 0 - 0 - .30= .30	1- 0- 0 - .75- 0 = 2.75	1- 0- 0 - 1- 0 = 2
COLLEGE TOTALS	93.5-82-175.25-100.75=451.5	117-94-213.25-93.25-14.75=532.5	123-125-238.3-103-16.7=606

Footnotes

(1) This department was known as German-Russian in 1965. In 1966 two departments were formed: Germanic Languages and Literatures, and Slavic Languages and Literatures.

(2) Includes the Bureau of Government Research.

(3) The Astronomy Department was combined with Physics in September of 1966.

(4) Biochemistry Department was separated from Chemistry in September of 1966.

TABLE 3: PROFESSIONAL PERSONNEL ACTIONS

	1965-66	1966-67	1967-68
Promotions	18	31	42[2]
Tenure Appointments	7	23[1]	20
Resignations & Terminations	37	45	56
Retirements	0	0	1
Deceased	0	0	1
Merit Increases	300	373	452[3]
Sabbatical Leaves taken during the academic year	27	14	21[4]
Leaves of Absence without Pay taken during the academic year	16	15	19[5]

Footnotes

(1) Four effective September 1, 1967 - nineteen effective September 1, 1968.

(2) Thirty-seven effective February 1, 1968 - five effective September 1, 1968.

(3) Four hundred fifty effective February 1, 1968, two effective September 1, 1968.

(4) Thirteen full year - three first semester - five second semester.

(5) Thirteen full year - two first semester - four second semester.

TABLE 3A: NON-PROFESSIONAL POSTIONS BY RANK

	1965 (Fall)	1966 (Fall)	1967 - 1968 (Fall)	(Spring)
Secretarial				
(03) Junior Clerk, Typist	6	6	6	9
(04) Junior Clerk, Steno	31	36	36	37
(06) Senior Clerk, Typist	11[1]	11[1]	13	13
(07) Senior Clerk, Steno	18	21	21	21
(09) Principal Clerk	4	6	7	9
Totals	70	80	83	89
Non-Secretarial (Technical)				
(02) Laboratory Helper	1	1	1	1
(04) Laboratory Assistant	8	9	9	9
(05) Animal Room Attendant	1	1	1	1
(06) Mechnical Handyman	1	1	1	1
(07) Herbarium Curator	1	1	1	1
(08) Laboratory Technician	1	1	1	1
(08) Technical Assitant	12	16	17	17
(09) Carpenter	1	1	1	1
(09) Machinist	2	2	2	2
(10) Electronic Technician	2	3	4	4
(10) Storekeeper	2	3	3	3
(11) Machinist Foreman	1	1	1	1
(12) Principal Storekeeper	1	1	2	2
(12) Technical Specialist	0	1	2	2
Totals	34	42	46	46

Footnote

(1) The eleven senior clerk typists (grade 06) indicated for 1965 and 1966 include one position assigned to the Provost's Office and allocated to the 4-College Astronomy Program. This position has been transferred to the College of Arts and Sciences.

TABLE 3B: FACULTY POSITIONS (FP) AND SECRETARIAL POSITIONS (SP): (FTE BASIS)

FALL 1967 & SPRING 1968

Division	Department	FP	SP (Fall)	SP (Spring)	FP/SP Ratio (Fall)	FP/SP Ratio (Spring)	Highest Ranking Position
Fine and Performing Arts	Art	19	2	2	9.5	9.5	SCS
	Music	17	2	2	8.5	8.5	PC
	Speech	35	4	5	8.8	7.0	SCS
Total		71	8	9	8.9	7.9	
Humanities	Comparative Literature	2	-	0.5	-	4.0	JCS
	English	85	10	10	8.5	8.5	PC
	Germanic Langs.	24	3	3	8.0	8.0	SCT
	History	45.8	5	5	9.2	9.2	SCS
	Philosophy	12	1.5	1.5	8.0	8.0	SCT
	Rom. Langs.	49	5	5	9.8	9.8	PC
	Slavic Langs.	6	1	1	6.0	6.0	JCS
Total		223.8	25.5	25.5	8.8	8.6	
Social Sciences	Economics	23	2	3	11.5	7.7	PC
	Government	31	6	6	5.2	5.2	SCS
	Psychology	24	4	5	6.0	4.8	SCS
	Sociology-Anthropology	26	3	4	8.7	6.5	SCS
Total		104	15	18	6.9	5.8	
Biological Sciences	Biochemistry	17.7	3	3	5.9	5.9	SCS
	Microbiology	7	1.5	1.5	4.7	4.7	SCS
	Zoology	27	5	5	5.4	5.4	PC
Total		51.7	9.5	9.5	5.4	5.4	
Physical Sciences	Biochemistry	5	1	1	5.0	5.0	JCS
	Chemistry	36	6	6	6.0	6.0	PC
	Geol.-Geog.	17	2	2	8.5	8.5	SCS
	Physics-Astro.	38	5	6	7.6	6.3	PC
Total		96	14	15	6.9	6.4	
Mathematics & Statistics	Mathematics	57.5	4	4	14.4	14.4	PC
	Statistics	2	1	1	2.0	2.0	JCS
Total		59.5	5	5	11.9	11.9	
TOTAL		606	77	82.5	7.9	7.3	
Dean's Office		5	6[2]	6.5[2]	--	--	SCS
GRAND TOTALS		611	83	89	7.4	6.9	

Footnote

(1) Abbreviations: JCS = Junior Clerk Steno (04); SCT = Senior Clerk Typist (06); SCS = Senior Clerk Steno (07); PC = Principal Clerk (09).

(2) The secretary to the Pre-Medical Advisory Committee is included among those assigned to the Dean's Office.

TABLE 3C: RATIOS OF FACULTY POSITIONS (FP) TO SECRETARIAL POSITIONS (SP) AND TO TECHNICAL POSITIONS (TP)(1)

	1965 (Fall)	1966 (Fall)	1967 - 1968 (Fall)	(Spring)
FP	451.5	532.5	606	
SP	63.5	74	77	82.5
FP/SP Ratio	7.1	7.2	7.9	7.3
FP	451.5	532.5	606	
TP	34	42	46	46
FP/TP Ratio	13.3	12.7	13.2	13.2

Footnote

(1) Computations based on total faculty positions (FTE) and do not include personnel in the Dean's Office.

TABLE 4: COMPARATIVE ENROLLMENTS AT U. MASS., AMHERST, BY CLASSES AND BY COLLEGES (SEPTEMBER OF EACH YEAR)

	1955	1957	1959	1961	1963	1964	1965	1966	1967
4-Yr. Undergraduates									
Freshmen	1088	1266	1838	1918	2286	2592	2622	2954	3040
Sophomore	899	1016	1149	1463	1727	2135	2516	2904	3061
Junior	897	879	994	1323	1648	1781	2225	2602	2964
Senior	744	830	874	980	1221	1469	1572	1971	2509
4-Yr. UNDERGRAD. TOTAL	3628	3991	4855	5684	6882	7977	8935	10431	11574
ARTS & SCIENCES	1721	1759	2472	3116	3976	4647	5060	5776	6335
Other Schools	1907	2232	2383	2568	2906	3330	3875	4655	5239
Agriculture	324	268	274	341	345	395	487	620	705
Business Adm.	506	501	550	503	602	678	831	1043	1244
Education	*	231	331	426	485	607	695	840	862
Engineering	792	967	849	836	847	898	894	939	969
Home Economics	183	132	130	114	178	194	268	369	458
Nursing	37	56	96	102	145	176	203	255	287
Physical Educ.	65	77	153	246	242	278	367	467	589
Public Health	*	*	*	*	62	104	109	122	125
No Major	--	--	--	--	--	--	21	--	--
Stockbridge	338	331	395	394	454	484	516	544	583
Graduate School	337	430	780	845	1303	1846	2240	2514	2835
ARTS & SCIENCES					632	904	1131	1325	1461
Other Schools					671	942	1109	1119	1374
Special and/or N.C.	38	39	101	96	172	190	168	190	210
UNIVERSITY TOTAL	4341	4791	6131	7018	8811	10497	11859	13679	15202

* The Schools of Education and Public Health were included in the College of Arts & Sciences until 1957 and 1963, respectively.

TABLE 5: COMPARATIVE ENROLLMENTS IN PERCENTAGES AT U. MASS., AMHERST, BY CLASSES AND BY COLLEGES (SEPTEMBER OF EACH YEAR)

	1955	1957	1959	1961	1963	1964	1965	1966	1967
4-Yr. Undergraduates									
Freshmen	25.1	26.5	30.0	27.	25.9	24.7	22.2	21.6	20.0
Sophomore	20.7	21.1	18.7	20.8	19.6	20.3	21.2	21.2	20.1
Junior	20.7	18.4	16.2	18.9	18.7	17.0	18.7	19.0	19.5
Senior	17.1	17.4	14.3	14.0	13.9	14.0	13.3	14.4	16.5
4-Yr. UNDERGRAD. TOTAL	83.6	83.4	79.2	81.0	78.1	76.0	75.4	76.2	76.1
GRADUATE	7.8	9.0	12.7	12.0	14.8	17.6	18.9	18.4	18.7
ARTS & SCIENCES	--	--	--	--	48.5	49.0	50.5	52.7	51.5
Other Schools	--	--	--	--	51.5	51.0	49.5	47.3	48.5
Stockbridge	7.8	6.8	6.5	5.6	5.15	4.6	4.3	4.0	3.8
Special and/or Non-Classified	.8	.8	1.6	1.4	1.95	1.8	1.4	1.4	1.4
UNIVERSITY TOTAL-100%=	4341	4791	6131	7018	8811	10497	11859	13679	15202
ARTS & SCIENCES	47.4	44.1	50.9	54.8	57.8	58.2	56.6	55.3	54.7
Other Schools	52.6	55.9	49.1	45.2	42.2	41.8	43.4	44.7	45.3
Agriculture	8.9	6.7	5.6	6.0	5.0	5.0	5.5	5.9	6.1
Business Adm.	14.0	12.6	11.3	8.9	8.7	8.5	9.3	10.1	10.7
Education	*	5.8	6.8	7.5	7.1	7.6	7.8	8.0	7.4
Engineering	21.9	24.2	17.5	14.7	12.3	11.3	10.0	9.0	8.4
Home Economics	5.0	3.3	2.7	2.0	2.6	2.4	3.0	3.5	4.0
Nursing	1.0	1.4	2.0	1.8	2.1	2.2	2.3	2.5	2.5
Physical Educ.	1.8	1.9	3.2	4.3	3.5	3.5	4.1	4.5	5.1
Public Health	*	*	*	*	.9	1.3	1.2	1.2	1.1
No Major	--	--	--	--	--	--	.2	--	--
4-Yr. UNDERGRAD.-100%=	3628	3991	4855	5684	6882	7977	8935	10431	11574

* See Footnote, TABLE 4

TABLE 6: TEACHING LOAD SUMMARY
FALL SEMESTER 1967

SCrH means Student Credit Hours; SCoH means Student Contact Hours; #Secs means total number of sections; laboratory, recitation and lecture; #Crs means number of courses taught exclusive of Honors, Special Problems and Thesis, all of which carry academic credit.

SP,H is the number of students enrolled in Senior Honors, Special Problems or other individual instruction. M.A. and PH.D. is the number of active thesis projects.

The ratio of student credit hours for the spring semester to that of the fall is an index of the change in teaching load between the two semesters.

	SCrH	SCoH	#Secs	#Crs	SP,H	M.A.	Ph.D.	Second Semeste
Fine and Performing Arts								
Art	4054	6660	62	34	4	16	0	.99
Music	4746	5905	31	51	1	0	0	.67
Speech	6946	7120	141	38	2	8	0	1.00
Totals	15746	19685	234	123	7	24	0	.90
Humanities								
Comp Lit	207	207	4	4	1	0	0	2.75
English-Journ	23199	23199	335	57	12	22	1	1.01
Germanic Lang.	4192	4900	81	26	0	0	5	.92
History	14163	14163	231	38	7	3	3	.94
Philosophy	2577	2577	34	15	1	2	5	1.06
Romance Lang.	9766	10204	167	46	3	0	6	.77
Slavic Lang.	910	1011	17	12	1	1	0	.78
Totals	55014	56161	869	198	25	28	20	.94
Social Sciences								
Asian Studies	69	75	2	2	0	0	0	.39
Economics	5295	5295	82	25	3	0	8	.89
Government	6243	6243	92	30	13	24	20	.92
Psychology	10230	10781	66	32	9	39	34	1.18
Sociology	8610	8610	92	33	3	17	7	1.00
Anthropology	2079	2079	15	14	0	2	0	1.20
Totals	32526	33083	349	136	28	82	69	1.03
Biological Sciences								
Botany	3564	4633	79	14	3	2	10	1.27
Microbiology	1327	2799	20	8	1	7	14	1.32
Zoology	8154	13062	137	20	15	35	21	1.49
Totals	13045	20494	236	42	19	44	45	1.47

TABLE 6: TEACHING LOAD SUMMARY
FALL SEMESTER 1967
(continued)

	SCrH	SCoH	#Secs	#Crs	SP,H	M.A.	Ph.D.	Second Semester
sical Sciences								
iochemistry	570	731	11	6	5	4	15	1.19
hemistry	8593	13572	147	30	9	6	89	.80
eology	3221	5099	71	15	1	21	7	.92
eography	285	355	7	2	0	0	0	3.58
hysics	4168	5399	110	24	5	1	8	.92
stronomy	1882	1877	48	6	0	0	0	.84
als	18719	27033	394	83	20	32	119	.91
hematics and tistics								
athematics	15344	15356	199	53	3	0	7	.85
tatistics	2337	2337	8	6	0	0	0	.90
als	17181	17612	207	59	3	0	7	.86
LEGE TOTALS	152731	174168	2289	641	102	210	260	.95
lege Totals One r Earlier	138692	164241	2067	559	351	157	250	.94

TABLE 7: STUDENT MAJORS (HEAD COUNT) BY DEPARTMENT AND DIVISION
(Fall semester)

	Undergraduate			Graduate			Totals		
	1965	1966	1967	1965	1966	1967	1965	1966	1967
Fine and Performing Arts									
Bachelor of Fine Arts			34			0			34
Art	113	149	149	47	53	52	160	202	201
Music	34	37	54	0	14	23	34	51	77
Speech	105	119	124	24	20	26	129	139	150
Totals	252	305	361	71	87	101	323	392	462
Humanities									
English	921	1101	1261	148	218	217	1069	1319	1478
Germanic Lang.	68	61	66	46	53	54	114	114	120
Slavic Lang.	31	41	44	0	0	3	31	41	47
History	579	648	687	85	95	117	664	743	804
Philosophy	43	44	61	29	36	44	72	80	105
Romance Lang.	274	337	341	47	61	76	321	398	417
Totals	1916	2232	2460	355	463	511	2271	2695	2971
Social Sciences									
Economics	128	168	155	51	51	68	179	219	223
Government	584	571	548	65	78	87	651	649	635
Psychology	384	451	524	118	116	118	502	567	642
Sociology-Anthr.	239	339	422	53	69	65	292	408	487
Totals	1335	1529	1649	287	314	338	1622	1843	1987
Biological Sciences									
Pre-Professional	243	132	86	0	0	1	243	132	87
Botany	33	36	33	27	26	41	60	62	74
Microbiology	42	76	76	25	34	34	67	110	110
Zoology	349	508	513	61	62	64	410	570	577
Totals	667	752	708	113	122	140	780	874	848
Physical Sciences									
Biochemistry			4			24			28
Chemistry	212	225	212	149	136	132	361	361	344
Geology-Geog.	41	71	98	35	26	30	76	97	128
Physics	72	78	85	58	72	88	130	150	173
Astronomy	16	27	31	0	0	1	16	27	32
Totals	341	401	430	242	234	275	583	635	705
Mathematics & Statistics									
Mathematics	549	557	536	63	91	96	612	648	632
Statistics	0	0	0	17	7	11	17	7	11
Totals	549	557	536	80	98	107	629	655	643
College of Arts & Sciences			191			0			191
COLLEGE TOTALS	5060	5776	6335	1148	1318	1472	6208	7094	7807

TABLE 8: FTE STUDENTS BY DEPARTMENT AND DIVISION
(FALL SEMESTER)

	F. T. E. STUDENTS		
	1965	1966	1967
Fine and Performing Arts			
Art	184	260	290
Music	117	142	338
Speech	318	386	495
Division Totals	619	788	1123
Humanities			
Comparative Literature	--	--	15
English	1237	1559	1659
Germanic Lang.	242	296	299
History	778	875	1112
Philosophy	98	136	198
Romance Lang.	538	629	697
Slavic Lang.	40	53	65
Division Totals	2933	3548	4045
Social Sciences			
Asian Studies	--	--	5
Economics	248	345	378
Government	435	453	445
Psychology	702	803	732
Sociology	392	528	615
Anthropology	51	96	149
Division Totals	1828	2225	2324
Biological Sciences			
Botany	211	257	255
Microbiology	54	101	95
Zoology	445	554	588
Division Totals	710	912	938
Physical Sciences			
Biochemistry	--	59	41
Chemistry	582	598	613
Geology - Geography	165	220	250
Physics	215	283	298
Astronomy	55	68	135
Division Totals	1017	1228	1337
Mathematics and Statistics			
Mathematics	790	1054	1096
Statistics	90	122	167
Division Totals	880	1176	1263
Other	3	-	-
COLLEGE TOTALS	7990	9877	11,030

TABLE 9: STUDENT-TO-FACULTY RATIOS (SEPT. 1967) WITH AND WITHOUT TEACHING ASSISTANTS (TA's)

NOTE: FTE stud. = 15 undergraduate student credit hours or 8 graduate student credit hours. S/F is the ratio of the numbers in the two columns to the left. T.A. Equiv. is an arbitrarily chosen figure, $7,200 of teaching assistant funds equals one faculty position. F* is column 2 increased by column 4. S/F* is the Student Faculty ratio with teaching assistants included.

	FTE Stud.	FTE Fac.	S/F	TA Equiv.	F*	S/F
Fine and Performing Arts						
Art	290	19	15.2	2.3	21.3	13.6
Music	338	17	19.9	2.3	19.3	17.5
Speech	495	35	14.1	1.7	36.7	13.5
Division	1123	71	15.8	6.3	77.3	14.5
Humanities						
Comparative Lit.	15	2	7.5	--	--	7.5
English	1659	84	19.7	14.3	98.3	16.9
Germanic Lang.	299	24	12.5	5.7	29.7	10.1
History	1112	46	24.2	6.5	52.5	21.2
Philosophy	198	12	16.5	2.6	14.6	13.5
Romance Lang.	697	49	14.2	5.0	54.0	12.9
Slavic Lang.	65	6	10.9	.3	6.3	10.3
Division	4045	223	18.1	32.4	255.4	15.8
Social Sciences						
Asian Studies	5	--	--	.3	.3	15.0
Economics	378	23	16.4	3.7	26.7	14.2
Government	445	28*	15.9	7.0	35.0	12.7
Psychology	732	24	30.9	9.0	33.0	22.2
Sociology	615	20	30.8	6.6	26.6	23.0
Anthropology	149	7	21.3	1.7	8.7	17.2
Division	2324	102	22.8	28.3	130.3	17.8
Biological Sciences						
Botany	255	18	14.2	4.	22.0	11.6
Microbiology	95	8	11.9	3.	11.0	8.6
Zoology	588	27	21.8	14.3	41.3	14.2
Division	938	53	17.7	21.3	74.3	12.6

TABLE 9: STUDENT-TO-FACULTY RATIOS (SEPT. 1967) WITH AND WITHOUT TEACHING ASSISTANTS (TA's)
(continued)

	FTE Stud.	FTE Fac.	S/F	TA Equiv.	F*	S/F
Physical Sciences						
Biochemistry	41	5	8.2	2.0	7.0	5.9
Chemistry	613	36	17.0	15.0	51.0	12.0
Geology	250	17	14.7	6.0	23.0	10.9
Physics	298	31	9.6	10.7	41.7	7.2
Astronomy	135	7	19.3	1.5	8.5	15.9
Division	1337	96	13.9	35.2	131.2	10.2
Mathematics and Statistics						
Mathematics	1096	56.5*	19.4	12.8	69.3	15.8
Statistics	167	4. *	41.7	1.7	5.7	29.2
Division	1263	60.5	20.9	14.5	75.0	16.8
COLLEGE TOTAL	11,030	605.5*	18.2	138.0	743.5	14.9

* Adjusted for borrowed teachers

TABLE 10: DEGREES AWARDED

	1965-66	1966-67	1967-68
B. A.	674	768	960
B. S.	136	169	224
B. F. A.	0	0	5
Total Bachelors	810	937	1,189
M. A.	121	114	142
M. F. A.	11	13	23
M. S.	108	169	163
M. Mus.	0	0	10
Total Masters	240	296	338
Ph.D.	42[1]	50[1]	49[1]
Grand Total	1,092	1,283	1,576

Footnote

(1) The breakdown by major departments is shown below.

Department	1965-66	1966-67	1967-68
Biochemistry	0	0	2*
Biology	1	0	1*
Botany	1	1	1
Chemistry	15*	11	17
Economics	2	1	1
English	0	2	3
Geology	1	1	1
German	0	0	1*
Government	1	7	4
History	0	0	0
Mathematics	0	1	2
Microbiology	0	0	2
Psychology	14	17	10
Sociology-Anthropology	2	3	0
Zoology	6	6	4
Totals	43	50	49

* One 4-College cooperative Ph.D. is included in each total.

TABLE 11: PERCENTAGES OF STUDENTS IN ARTS AND SCIENCES WITH CUMULATIVE AVERAGES EQUAL TO OR EXCEEDING SELECTED LEVELS, BY CLASS

	Class of			
Average	1968	1969	1970	1971
4.0	0.0	0.0	0.1	0.0
3.8	0.3	0.5	0.8	0.4
3.6	1.5	1.7	2.7	3.2
3.4	4.8	3.0	4.7	7.4
3.2	10.5	8.0	9.0	9.9
3.0	19.6	15.8	17.1	16.2
2.8	30.3	25.3	26.8	23.4
2.6	44.6	37.2	36.9	33.4
2.4	58.8	50.2	48.1	44.5
2.2	73.0	62.6	62.6	57.2
2.0	86.2	78.0	74.7	69.0
1.8	97.0	91.2	86.5	77.9
1.6	99.7	97.6	94.4	86.4
1.4	99.9	99.2	98.1	91.4
1.2	100.0	99.8	99.3	95.2
Total Number of Students	1148	1528	1541	1790
Median Average	2.524	2.402	2.358	2.314

TABLE 12: BOOKS AND MONOGRAPHS, BY DEPARTMENT AND DIVISION (1967-68)

Note: In cases of multiple authorship the name of that author who is a member of our faculty is underlined.

FINE AND PERFORMING ARTS (5)

Music (4)

Bezanson, Philip - Diversion for Brass Trio, 17 pages, New Valley Music Press, Smith College 1968.

Fussell, Charles, Ford Foundation Contemporary Music Project - (1) Dance Suite, Ballet in 4 movements, (2) Fantasy-Sonata for Winds, 6 movements, (3) Three Inventions for Clarinets.

Speech (1)

Volbach, Walter R. - Problems of Opera Production. Anchor Books, Hamden, Conn., 1967

HUMANITIES (14)

Comparative Literature (1)

Fleischmann, Wolfgang Bernard (General Editor) - Encyclopedia of World Literature in the Twentieth Century (New York: Ungar, 1967) Volume I A-F, XXIV + 425 pp.

English (4)

Aczel, Tamas - Szabadsag a ho alatt - Ismeretlen orosz kolteszet 1957-1967. Freedom under the Snow - Unknown Russian Poetry 1957-1967; annotated by Laszlo Tikos, Professor of Slavic Language and Literature, Aurora Books, Munich Germany, 1967. 80 pp. (In Hungarian)

Berlin, Normand - The Base String. Fairleigh Dickinson University Press 1968

Emerson, Everett H., co-editor - The Prose of John Milton, New York, Doubleday and Co., 1967; New York Univents Press, 1968

Mitchell, John H. - Writing for Technical and Professional Journals, New York, John Wiley and Sons, 1968, 405 pp.

Germanic Languages and Literatures (5)

Born, J. - Franz Kafka, Briefe on Felice (co-editor) Frankfurt au Main: S. Fischer, 1967 (2nd printing, January 1968)

Denkler, H. - Georg Kaiser: Die Burger von Calais. Drama und Dramaturgie. Munchen, 1967. 100 pp.

Paulsen, W. - (Ed.) Aspekte des Expressionismus, Periodisierung Stil - Bedankenwelt. Heidelberg: Lothar Stiehm Verlag, 1968.

Ryan, L. - Friedrich Holderlin (Sammlung Metzler, #20.) Stuttgart: J B Metzler, Second, revised edition 1967.

Weigand, H - Fahrten und Fundo. Bern: Francke 354 pp.

History (1)

Johnston, William M. - The Formative Years of R.G. Collingwood, Martinus Nijhoff, The Hague, 1967, pp. 165

Romance Languages and Literatures (3)

Johnson, Robert T. - Henry de Montherlant N.Y., Twayne Publishers, Inc. 1968 157 pp

Lawall, Gilbert - "Theocritus' Coans--Pastorals A Poetry Book," Harvard University Press, 1967

Taylor, Robert E (with Alain Dufour and Edith Bayle) - Bibliographie internationale de l'Humanisme et de la Renaissance. II: Travaux parus en 1966. Geneve: Droz, 1967. ix, 514 pp.

SOCIAL SCIENCES (15)

Economics (4)

Blackman, John L. - Presidential Seizures in Labor Disputes. Harvard University Press, pp. 368.

Holesovsky, Vaclav - Personal Consumption in Hungary: 1938 and 1947-1965. (With Dr. George Pall) Occasional Papers of the Research Project on National Income in East Central Europe, No. 18, N.Y., Columbia University, 1968, pp. 1-111, 90 (Monograph)

Seligman, Ben B - Permanent Poverty: An American Syndrome, Quadrangle Books: Chicago, 1968, 238 pp.

_____ - Principales corrientes de la ciencia economica moderna (Spanish translation of Main Currents In Modern Economics) published by oikos-tau, s.a., ediciones, Barcelona, Spain, 1967, 961 pages

Government (6)

Coulter, Philip and Gordon, Glen, Voting Behavior in Massachusetts. University of Massachusetts: Bureau of Government Research, 1967. pp. 62

Feit, Ewald - African Opposition in South Africa: The Failure of Passive Resistance - Stanford, California; Hoover Institution, Stanford University. 1967 pp. 223.

Goldman, Sheldon - Roll Call Behavior in the Massachusetts House of Representatives: A Test of Selected Hypotheses Amherst, Massachusetts: Bureau of Government Research, University of Massachusetts, 1967. pp. 83.

Houn, Franklin W. - A Short History of Chinese Communism, Englewood Cliffs, New Jersey: Prentice-Hall, Incorporated 1967, pp. VII & 245.

Oppenheim, Felix - Moral Principles in Political Philosophy New York: Random House, 1968.

Vali, Ferenc A - The Quest for a United Germany. Baltimore: Johns Hopkins Press, 1967 pp IX and 318.

Psychology (1)

Appley, M. H. and Rickwood, Jean - Psychology in Canada. Ottawa: Queen's Printer, 1967 (Special Study No. 3, Science Secretariat), 131 pp.

Sociology - Anthropology (4)

Halpern, Joel - The Changing Village Community (Modernization of Traditional Societies Series), Englewood Cliffs, N. J. Prentice-Hall, Inc 1967

_____ - A Serbian Village (revised edition) Colophon Books, Harper and Row, N Y 358 pp. 1967.

Pi-Sunyer, Oriol - Zamora, Louisiana University Press, 1967.

Prufer, O. H. - Studies in Ohio Archeology. Western Reserve University Press, Cleveland, 1967. XV & 368 pp. (with D. H. McKenzie)

PHYSICAL SCIENCES (8)

Chemistry (2)

Rowell, R. L. and Stein, R S , Editors - Proceedings of the Second Interdisciplinary Conference on Electromagnetic Scattering (University of Massachusetts, 1965) Gordon and Breach Science Publishers, New York, 1967, 842 pp.

Siggia, S. - Survey of Analytical Chemistry, McGraw-Hill, New York 1968, 298 pp

Biochemistry (2)

Robinson, Trevor - The Organic Constituents of Higher Plants, Second Edition, Burgess Publishing Company, Minneapolis, 1967. pp. 319.

_____ - Biochemistry of Alkaloids, Series in Molecular Biology, Vol. 3, Springer Verlag. June, 1968.

Geology and Geography (4)

Farquhar O.C. (editor) - Economic Geology in Massachusetts, U.M. Graduate School, Amherst, 1967. 568 pp.

Harthshorn - Geology of the Taunton Quadrangle, Mass., U.S. Geological Survey Bulletin 1163-D. 1967, 67 pp. and map.

Hayes, M.O. - Hurricanes as Geological Agents: Case Studies of Hurricanes Carla, 1961, and Cindy, 1963. Texas Bureau of Economic Geology, Investigation No. 61, 1967. 56 pp.

Peter, Robinson (editor) - Field Trips in the Connecticut Valley, Mass. (Guidebook for 59th Annual meeting , New England Intercollegiate Geological field conference), Amherst, Mass. 1967. 194 pp.

Mathematics & Statistics (3)

Cullen, Helen F. - Introduction to General Topology D.C. Heath and Company, 1968, 427.

Su, J.C. - Homological Algebra, Academic Sinica, National Taiwan University, 1968, 133.

Statistics (1)

Oakland, G.B. - Statistics. Wm. Brown Publishing Co., Iowa, 1967, 243 pp.

TABLE 13: RESEARCH AND TRAINING GRANTS AND CONTRACTS (1967-68)

The Face Value/Year for each grant or contract in effect during 1967-86 was calculated by dividing the total face value by the number of years for which the grant or contract was awarded.

Fine and Performing Arts	Face Value Per Year	No. of Grants	Average Face Value Per Year	FY '68 Payroll From Non-State Funds
Art	9,147	11	832	2,854
Music	900	2	450	10
Speech	41,539	5	8,308	678
Division Totals	51,586	18	2,866	3,542
Humanities				
English	29,925 [1]	16	1,870	19,021
History	60,482	6	10,080	44,575
Germanic Langs.	4,500	8	563	302
Slavic Langs.	500	1	500	
Romance Langs.	1,100	3	367	28,868
Philosophy	620	1	620	263
Division Totals	97,127	35	2,761	93,029
Social Sciences				
Economics	17,426	5	3,485	2,983
Government	35,102	20	1,755	37,557
Psychology	241,763	28	8,634	163,796
Soc-Anthr.	74,427	18	184,135	31,636
Division Totals	367,866	71	5,181	235,972
Biological Sciences				
Botany	49,547	17	5,616	81,430
Microbiology	108,372	16	6,773	115,829
Zoology	238,591	21	11,361	202,970
Division Totals	396,510	54	7,343	400,229
Physical Sciences				
Biochemistry	26,339	2	13,170	56,956
Chemistry	328,167	38	8,636	241,352
Geology & Geography	81,420	11	7,401	42,080
Physics and Astronomy	631,749	22	28,716	285,770
Division Totals	1,067,676	73	14,626	542,566
Mathematics and Statistics				
Mathematics	21,985	5	4,397	49,477
Statistics	100	1	100	
Division Totals	22,085	6	3,681	49,477
COLLEGE TOTALS	1,975,350	257	7,686	1,324,815

Footnote

(1) Professor Copeland's $189,000 grant was rated at 20 years in obtaining this total.

TABLE 14: SELECTED PROFESSIONAL ACTIVITIES OF THE FACULTY

ivision	Department of Art	
INE & PERF. ARTS	Norton, Paul	Director, Society of Architectural Historians and member of the editorial board of its journal; member, Committee on Education in the Arts, Mass. Board of Higher Education
	Perkins, Lyle	Chairman, Membership Committee, National Council for Education in the Ceramic Arts.
	Department of Music	
	Krosnick, Joel	Recitals throughout the United States and Europe.
	Lebow, Howard	(Deceased, Jan., 1968) Soloist, first American Liszt Society Festival in Virginia.
	Olevsky, Estela	Pianist for the New York Cello Association in New York on May 12, 1968.
	Olevsky, Julian	Soloist, in Carnegie Recital Hall New York, on February 7, 1968.
	Steele, Ronald A.	Guest conductor, Michigan All-State Orchestra, Interlochen, Michigan, the Massachusetts Central District Orchestra, Worcester, and the Lansing Symphony Orchestra, Lansing, Michigan.
	Department of Speech	
	Blankenship, Jane	Vice Chairman, Phonetics, Linguistics and Voice Science Interest Group of Speech Association of America.
	Cohen, Herman	Editorial board, Speech Monographs.
	Hulsen, Albert	Chairman, Eastern Educational Radio Network.

Division	Department of Speech	
FINE & PERF. ARTS	Reid, Ronald F.	Vice President, Speech Association of the Eastern States, Editorial Board, Speech Monographs.

	Department of Comparative Literature	
HUMANITIES	Fleischmann, Wolfgang	Chairman, Neo-Latin Conference Group, Modern Language Association of America Annual Meeting, 1967

	Department of English	
	Alspach, Russell	Consultant; Concordance of Yeat's plays and Concordance of Faulkner.
	Chametzky, Jules	Editor, Massachusetts Review.
	Emerson, E.	Consultant to Hampshire College, St Andrews College, Choice; Secretary, Conference on Early American Literature, Modern Language Association.
	Gibson, Walker	Executive Committee, Conferenc on College Composition and Communication.
	Koehler, S.	Director, Writer's Workshop of Chautauqua, N.Y.
	Mitchell, J.	Director, Nantucket Writers' Workshops.
	Politella, D.	President, National Council College Publications Advisors; Editor, The Collegiate Journalist.
	Spivack, B.	Secretary, Shakespeare Sectior Modern Language Association.

Division	Department of English	
HUMANITIES	Tucker, Robert	Managing Editor, Massachusetts Review.
	Turner, F. W.	Technical Assistant, N.E.T., Providence Outlet, WBSETV.
	Department of Germanic Languages & Literatures	
	Weigand, H.	Executive Committee, Modern Language Association.
	Department of History	
	Cantor, Milton	Editor, Labor History.
	DePillis, Mario	Editorial board, Journal Of Social History.
	Johnston, William	Scholars Advisory Committee of the International Lenau Society.
	Department of Philosophy	
	Gettier, Edmund	Editorial Board, Nous.
	Department of Romance Languages & Literatures	
	Cassirer, Thomas	Fellow, African Studies Association.
	Dufau, Micheline	Chairman, CEEB French Listening Committee.
	Goding, Stowell C.	Editor, Bay State F.L. Bulletin; Consultant, U.S. Office of Education.
	Rothberg, Irving P.	Editor in chief, Hispania
	Taylor, Robert E.	Associate editor, Renaissance Society of America.

Division	Department of Romance Languages & Literatures	
HUMANITIES	Tillona, Zina	Consultant, New York State Department of Education.
	Department of Economics	
SOCIAL SCIENCES	Barkin, Solomon	Consultant, OECD, 1968--Manpower and Social Affairs Commission Activities and Examination of Norway; Director, National Institute of Industrial Gerontology.
	Howard, Marshall	Editorial Staff, Journal Of Marketing.
	Slitor, Richard	Consultant, National Commissi on Urban Problems (The Douglas Commission) 1967-68.
	Department of Government	
	Beth, Loren	Managing Editor, Polity.
	Havard, William	President, New England Politi Science Association; Editoria Board, Polity.
	Howards, Irving & Mileur, Jerome	Staff, the Massachusetts "Little Hoover Commission".
	Department of Psychology	
	Appley, Mortimer H.	Vice-Chairman, Education and Training Board, American Psychological Association; Board of Directors, Canadian Psychological Association; Panelist, Science Faculty Fellowship Selection Program, National Science Foundation.
	Epstein, Seymour	Editorial Board, Journal of Consulting Psychology.

ivision		
	Department of Sociology & Anthropology	
OCIAL CIENCES	Driver, Edwin B.	Consultant for Ford Foundation on Birth Control Studies in India.
	Golden, Hilda	Associate Editor: Sociology of Education.
	Gordon, Milton M.	Executive Committee, Eastern Sociological Society; General Editor: Prentice-Hall Series of Books on Ethnic Groups in American Life.
	Lee, Everett S.	President-Elect, Population Association of America; Chairman Committee on Social Statistics, Eastern Sociological Society; Council, Center for Information on America; member, National Committee on Vital and Health Statistics, United States, National Academy of Sciences Committee on Social and Biological Aspects of Urban Research.
	Department of Botany	
IOLOGICAL CIENCES	Livingston, R.B.	Member, Mass. Water Resources Committee.
	Rowley, J.R.	Editorial Board, Journal of Palynology.
	Department of Microbiology	
	Cox. C.D.	Editorial Board, Journal of Bacteriology; member, NASA advisory panel for environmental biology: Member NRC Committee on Naval Biomedical Research.
	Thorne, C.B.	Editorial Board, Journal of Bacteriology; member, Eli

Division	Department of Microbiology	
BIOLOGICAL SCIENCES		Lilly Award Committee.
	Department of Zoology	
	Anderson, E.	Member of the Corporation, Woods Hole Marine Biological Laboratory; Editorial Boards of (1) Journal of Cell Biology, (2) Journal de Microscopie; Associate Editor, Anatomical Record.
	Bartlett, L.M.	Consultant, National Science Foundation, Division of Undergraduate Education in Science.
	Fairbairn, D.	Editorial Boards, (1) J. Parasitology, (2) Experimental Parasitology, (3) Am. J. Epidemiology; Chairman, Committee on Awards and Honors American Soc. of Parasitologis Consultant, National Institutes of Health, Special Facilities Branch.
	Honigberg, B.M.	Associate Editor, Trans. Amer. Microscopical Soc.; Chairman, permanent U.S. delegation to International Commission on Protozoology.
	Klingener, D.J.	Associate Editor, J. of Mammal
	Sargent, T.D.	Editorial Committee, The Auk.
	Department of Chemistry	
PHYSICAL SCIENCES	McEwen William E.	Editorial Board, Journal of Organic Chemistry; Chairman, Advisory Panel for Chemistry of the National Science Foundation
	Rausch, Marvin	Member, Planning Committee of

vision

YSICAL
IENCES

Department of Chemistry

	Third International Conference on Organometallic Chemistry, Munich, German, Aug. 27-Sept. 1, 1967.
Siggia, Sidney	Member, Committee for Analytical Methods of the International Union of Pure and Applied Chemistry.
Stein, Richard S.	Advisory Board, Journal of Polymer Science; Discussion leader, Gordon Research Conference.

Department of Geology and Geography

Bromery, R.W.	Consultant, U.S. Dept. of State A.I.D. program on Geophysical Survey of Liberia.
Smith, H.T.U.	Consultant, Jet Propulsion Lab., Cal. Tech., on Martian spacecraft project.

Department of Physics

Gluckstern R.L.	Consultant and Visiting Scientist at Brookhaven National Laboratory, Los Alamos Scientific Laboratory, National Accelerator Laboratory and Lawrence Radiation Laboratory, Berkeley, on the Theory of High Energy Accelerators.
Kofler, R.R.	Consultant, Argonne National Laboratory.
Strong, J.D.	Policy Committee, Optical Society of America; Visiting Committee, National Bureau of Standards; Member, Scientific Panel of Maryland Academy of Science.

Division	Department of Mathematics	
MATHEMATICS & STATISTICS	Cohen, Haskell	Visiting Lecturer for the Mathematical Association of America under the sponsorship of the National Science Foundation.
	Whaples, George	Member, NSF Postdoctoral Fellowship Panel.

TABLE 15: NEW FULL-TIME FACULTY RECRUITED (AS OF 7/10/68) ACCORDING TO RANK

Rank	Type of Position Occupied		
	New	Old	Total
Professor	8	7	15
Associate Professor	6	14	20
Assistant Professor	31	32	63[1]
Instructor	8	14	22
Lecturer	2[2]	0	2
Totals	55	67	122[3]

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1. Included in this total are 24 Assistant Professors who have been appointed at this rank subject to receipt of the Ph.D. prior to September 1, 1968. None have reverted to instructorships at this date.

2. One of these appointments is at the rank of "Resident Artist".

3. In addition, 7.3 New positions and 11.5 Old positions were filled by part-time appointments, making a total FTE recruitment of 140.8.

   The total FTE recruitment of 140.8 also includes the use of 4 New and 8 Old positions to cover commitments made for September, 1967.

TABLE 16: NEW FULL-TIME FACULTY RECRUITED (AS OF 7/10/68) FOR SEPTEMBER 1968 BY DIVISION, DEPARTMENT, AND RANK

The number of positions of Professor, Associate Professor, Assistant Professor, Instructor and Lecturer, respectively, and the total number of positions in each department is indicated by the series of numbers in each column.

Div/Dept	Type of Position Occupied: New	Old	Total
Fine and Performing Arts			
Art	0- 1- 0- 1- 1 = 3	1- 1- 0- 1- 0 = 3	1- 2- 0- 2- 1 = 6
Music	0- 0- 1- 1- 1 = 3	0- 0- 0- 1- 0 = 1	0- 0- 1- 2- 1 = 4
Speech	2- 1- 5- 0- 0 = 8	0- 0- 0- 8- 0 = 8	2- 1- 5- 8- 0 = 16
TOTALS	2- 2- 6- 2- 2 = 14	1- 1- 0-10- 0 = 12	3- 3- 6-12- 2 = 26
Humanities			
English	1- 0- 4- 0- 0 = 5	1- 2- 6- 3- 0 = 12	2- 2-10- 3- 0 = 17
Germ. Lang.	0- 0- 1- 0- 0 = 1	0- 0- 4- 0- 0 = 4	0- 0- 5- 0- 0 = 5
History	1- 0- 2- 1- 0 = 4	0- 1- 5- 0- 0 = 6	1- 1- 7- 1- 0 = 10
Philosophy	1- 0- 0- 0- 0 = 1	0- 1- 0- 0- 0 = 1	1- 1- 0- 0- 0 = 2
Rom. Lang.	0- 0- 2- 0- 0 = 2	0- 1- 0- 1- 0 = 2	0- 1- 2- 1- 0 = 4
Salvic Lang.	0- 0- 0- 0- 0 = 0	0- 1- 1- 0- 0 = 2	0- 1- 1- 0- 0 = 2
Como. Lit.	0- 0- 2- 0- 0 = 2	0- 0- 0- 0- 0 = 0	0- 0- 2- 0- 0 = 2
TOTALS	3- 0-11- 1- 0 = 15	1- 6-16- 4- 0 = 27	4- 6-27- 5- 0 = 42
Social Sciences			
Economics	1- 0- 0- 0- 0 = 1	1- 0- 2- 0- 0 = 3	2- 0- 2- 0- 0 = 4
Government	0- 0- 2- 0- 0 = 2	0- 0- 1- 0- 0 = 1	0- 0- 3- 0- 0 = 3
Psychology	1- 1- 4- 0- 0 = 6	1- 1- 1- 0- 0 = 3	2- 2- 5- 0- 0 = 9
Soc-Anth	0- 1- 1- 1- 0 = 3	0- 2- 0- 0- 0 = 2	0- 3- 1- 1- 0 = 5
TOTALS	2- 2- 7- 1- 0 = 12	2- 3- 4- 0- 0 = 9	4- 5-11- 1- 0 = 21
Biological Sciences			
Botany	0- 0- 0- 0- 0 = 0	2- 0- 1- 0- 0 = 3	2- 0- 1- 0- 0 = 3
Microbiology	0- 0- 0- 0- 0 = 0	0- 0- 1- 0- 0 = 1	0- 0- 1- 0- 0 = 1
Zoology	0- 0- 0- 0- 0 = 0	0- 0- 0- 0- 0 = 0	0- 0- 0- 0- 0 = 0
TOTALS	0- 0- 0- 0- 0 = 0	2- 0- 2- 0- 0 = 4	2- 0- 2- 0- 0 = 4

TABLE 16: NEW FULL-TIME FACULTY RECRUITED (AS OF 7/10/68) FOR SEPTEMBER 1978 BY DIVISION, DEPARTMENT, AND RANK (continued)

Div/Dept	Type of Position Occupied: New	Type of Position Occupied: Old	Type of Position Occupied: Total
Physical Sciences			
Biochem	0- 0- 1- 0- 0 = 1	0- 0- 0- 0- 0 = 0	0- 0- 1- 0- 0 = 1
Chemistry	0- 0- 0- 0- 0 = 0	0- 1- 1- 0- 0 = 2	0- 1- 1- 0- 0 = 2
Geol-Geog	0- 0- 0- 1- 0 = 1	0- 0- 0- 0- 0 = 0	0- 0- 0- 1- 0 = 1
Physics-Astron	0- 1- 2- 0- 0 = 3	0- 2- 1- 0- 0 = 3	0- 3- 3- 0- 0 = 6
TOTALS	0- 1- 3- 1- 0 = 5	0- 3- 2- 0- 0 = 5	0- 4- 5- 1- 0 =10
Mathematics and Statistics			
Math	1- 1- 4- 3- 0 = 9	0- 1- 8- 0- 0 = 9	1- 2-12- 3- 0 =18
Stat	0- 0- 0- 0- 0 = 0	1- 0- 0- 0- 0 = 1	1- 0- 0- 0- 0 = 1
TOTALS	1- 1- 4- 3- 0 = 9	1- 1- 8- 0- 0 =10	2- 2-12- 3- 0 =19
COLLEGE TOTALS	8- 6-31- 8- 2 = 55	7-14-32-14- 0 =67	15-20-63-22- 2 =122

TABLE 17: FACULTY VACANCIES (AS OF 7/10/68)

(FTE BASIS)

Note: Faculty ranks are indicated below by the same notation used in earlier charts.

Reason for Vacancy						
Resignation, death, etc.	2.5	0.0	5.0[1]	0.5	0.0	= 8
LWOP, etc.	2.0	3.5	8.5	0.0	0.0	= 14
TOTAL VACANCIES	4.5	3.5	13.5	0.5	0.0	= 22
Vancancies used to "back-up" stipends for TA's	2.5	3.0	8.0	0.0	0.0	= 13.5
Effective Vacancies	2.0	0.5	5.5	0.5	0.0	= 8.5

Footnote

(1) Included in this total is the position of a faculty member who is currently holding a University position outside the College; and also included is the position of a faculty member currently holding a Career Award Grant.

APPENDIX B

NEW FACULTY APPOINTMENTS FOR 1968-69

FINE AND PERFORMING ARTS (26)

t (6)

Becker, Frederick G. - Professor: Printmaking

Federal Art Project
Lecturer, Temple University
Professor, Washington University (St. Louis)

Hitchcock, Henry R. - Professor:* Architectural History

A.B. -Harvard
A.M. -Harvard Architectural School
Assistant Professor, Vassar College
Assistant Professor, Associate Professor and Professor, Wesleyan University
Professor, Smith College
Lecturer, Massachusetts Institute of Technology
Sophia Smith Professor, Smith College

Roskill, Mark W. - Associate Professor: History of Art

B.A. and M.A. - Trinity College (England)
M.A. -Harvard
M.F.A. -Princeton
Ph.D. -Princeton
Instructor and Assistant Professor, Harvard.

Wardlaw, George - Associate Professor: Painting

B.F.A. -Memphis State University
M.F.A. -University of Mississippi
Teaching, University of Mississippi
Teaching, Louisiana State University
Teaching, State University of New York at New Paltz
Assistant Professor and Associate Professor, Yale.

Tarr, Gary - Instructor: Oriental Art

A.B. and M.A. - University of California at Los Angeles
Candidate for Ph.D., University of California at Los Angeles.

Parks, Susan - Lecturer: Ceramics

B.A. -Mount Holyoke College
M.F.A. -University of Massachusetts

Fall Semester.

Music (4)

Lehrer, Charles J. - Assistant Professor: Oboe and Woodwinds

B.A. -Trenton State College
M.M. -Boston University
A.Mus.D. -University of Michigan.

Kaeser, Fernande - Resident Artist: Pianist

College Classique de Vevey
Institut de Ribaupierre
Conservatoire de Musique, Geneva
Conservatorio Alessandro Scarlatti, Naples
Musikakademie, Vienna
Concerts in most countries of Europe
Two National Concert Tours for the Jeunesses Musicales of Switzerland
Performed in many European broadcasting companies and played with more than 30 orchestras.

d'Armand, John B. - Instructor: Bass-baritone, voice teacher

B.S. -University of Tennessee
B.M. -Baldwin-Wallace College
M.M. -University of Illinois.

Olevsky, Estela K. - Lecturer:* Pianist

M. Mus. -National Conservatory, Buenos Aires.

Speech (16)

Shepard, John A. - Visiting Professor: Mass Communications, educational television

B.A. and M.A. - Stanford University
Ph.D. - University of Southern California
Assistant Professor, Whitman College
Assistant Professor, University of Washington
Assistant Professor, Associate Professor, and Professor University of Oregon
Coordinator KOAC-TV, Radio, University Studios, and Director of Broadcast Services and Televised Instruction, University of Oregon.

Wallace, Karl R. - Professor: Rhetorical Theory

B.A.,M.A., and Ph.D. - Cornell University
Assistant Professor, Iowa State College
Assistant Professor, Washington University (St. Louis)
Associate Professor, Professor, and Chairman, University of Virginia
Professor and Head of Department, University of Illinois
Phi Beta Kappa.

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* Appointed Spring Semester, 1967-68; reappointed 1968-69.

Bevilacqua, Vincent M. - Associate Professor: Rhetoric

B.A. and M.A. - Emerson College
Ph.D. - University of Illinois
Instructor, University of New Mexico
Assistant Professor, University of Virginia
Assistant Professor, Cornell University.

Bednerik, Marya - Assistant Professor/Instructor: Theatre

B.A. - Bennington College
M.A. - Bowling Green State University
Candidate for Ph.D., University of Iowa.

Bohn, Thomas W. - Assistant Professor/Instructor: Radio-film-television

B.A. - Gustavus Adolphus College
M.A. - Southern Illinois University
Candidate for Ph.D., University of Wisconsin.

Bryson, Nicholas - Assistant Professor/Instructor: Theatre

B.A. - Sir George Williams University
Candidate for M.F.A., University of Wisconsin.

Hipskind, Nicholas M. - Assistant Professor/Instructor: Audiology

B.S. and M.A. - Ball State University
Candidate for Ph.D., Michigan State University.

Weaver, Richard L. II - Assistant Professor/Instructor: Rhetoric

A.B. and M.A. - University of Michigan
Candidate for Ph.D., Indiana University

Weiss, Elizabeth - Assistant Professor/Instructor: Theatre, costume design

B.A. - University of Evansville
Candidate for M.F.A., University of Wisconsin.

Aldrich, Dorothy - Instructor: Children's Theatre

A.B. - Tufts University
M.A. - University of Pittsburgh
Supervisor of a creative dramatics program in disadvantaged areas in Pittsburgh.

Catterson, Sallie K. - Instructor: Rhetoric and Oral Interpretation

B.A. and M.A. - University of Nebraska.

Emry, Robert - Instructor: Rhetoric

B.A. and M.A. - University of South Dakota
Casper Midwest Public School System.

Heron, Barbara A. - Instructor: Rhetoric

B.A. - Indiana University
Candidate for M.A., Indiana University
Phi Beta Kappa.

Loutherback, Linda - Instructor: Rhetoric

B.A. - Hardin-Simmons University
Candidate for M.A., University of Wisconsin.

Newton, Kenneth - Instructor: Rhetoric

B.A. - Michigan State University
M.A. - Illinois State University.

Porter, Priscilla A. - Instructor: Rhetoric

B.S.Ed. - Northwest Missouri State College
M.A. - Bowling Green State University
Eastgate Junior High School, Kansas City, Missouri
Instructor, Ohio Northern University.

parative Literature (2)

Schroeder, Henry A., Jr. - Assistant Professor: Medieval English

B.A. - Yale
A.M. - Harvard
Ph.D. - Yale
Instructor and Assistant Professor, Yale.

Levine, Don E. - Assistant Professor/Instructor: Medieval and Renaissance Studies

A.B. - Columbia
Candidate for Ph.D., Princeton.

lish (16)

Barnard, Ellsworth - Visiting Professor: The Romantic Poets, 19th Century English Literature, Modern American Poetry

B.S. - University of Massachusetts
M.A. and Ph.D. - University of Minnesota
Assistant Professor, University of Tampa
Instructor, Williams College
Lecturer, University of Wisconsin
Associate Professor, Professor, Chairman, Alfred University
Lecturer, University of Chicago
Professor, Northern Michigan University.

Plumstead, Arthur W. - Associate Professor: American Literature, Elizabethan Drama, Literary Criticism

A.B. - University of Western Ontario
M.A. and Ph.D. - University of Rochester
Instructor, Assistant Professor, University of Saskatchewan
Assistant Professor, Associate Professor, University of Minnesota.

Beekman, Eric M. - Assistant Professor:* Modern English, French and German Literature

B.A. - University of California at Berkeley
Ph.D. - Harvard.

Freeman, Donald C. - Assistant Professor: Elizabethan English, Linguistics

A.B. - Middlebury College
A.M. - Brown University
Ph.D. - University of Connecticut
Assistant Professor, University of California at Santa Barbara.

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ppointed Spring Semester, 1967-68; reappointed 1968-69.

Mariani, Paul L. - Assistant Professor: Victorian and Modern British Literature, Chaucer

B.A. - Manhattan College
M.A. - Colgate University
Ph.D. - City University of New York
Instructor, Hunter College.

Paroissien, David H. - Assistant Professor: 19th Century British Literature

B.A. - University of Hull (England)
M.A. - Highlands University
Ph.D. - University of California at Los Angeles.

Quick, Jonathan R. - Assistant Professor: English and American Novel

B.A. - Rutgers
M.A. and Ph.D. - Yale
Phi Beta Kappa

Teunissen, John J. - Assistant Professor: 17th Century, Milton, and American Literature

B.A. and M.A. - University of Saskatchewan
Ph.D. - University of Rochester
Assistant Professor, University of Saskatchewan.

Diamond, Arlyn - Assistant Professor/Instructor: Medieval Literature

B.A. - University of California at Berkeley
M.A. - Columbia
Candidate for Ph.D., University of California at Berkeley.

Freeman, James A. - Assistant Professor/Instructor: 17th Century, Milton, Literary Criticism

A.B. - Amherst College
Candidate for Ph.D., University of Minnesota.

Sharp, Royal C. - Assistant Professor/Instructor: Structural Linguistics, Medieval English, Literature and American Literature

B.A. - Carson-Newman College
M.A. - University of Tennessee
Candidate for Ph.D., University of Wisconsin.

Burrow, John A. - Visiting Professor:* Chaucer, Medieval English literature
Oxford University (England)
Assistant Lecturer, London University
Lecturer, Oxford University.

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* Spring Semester, 1968-69.

Carlisle, Elizabeth P. - Instructor:* Freshman Composition

B.A. - Smith College
M.A. - University of Michigan.

Edwards, Lee R. - Instructor:* Freshman Composition

B.A. - Swarthmore College
M.A. - University of California at Berkeley
Candidate for Ph.D., University of Massachusetts.
Phi Beta Kappa.

Oppenheim, Adele S. - Instructor:* Freshman Composition

B.A. - Hunter College
M.A. - University of Kentucky
Phi Beta Kappa.

Smith, Elaine T. - Instructor:* Freshman Composition

B.A. - Washington State College
M.A. - University of Illinois
Phi Beta Kappa.

rmanic Languages and Literatures (6)

Bauschinger, Sigrid - Assistant Professor: 20th Century German Literature, German-American Literature

Undergraduate degrees - University of Frankfurt (Germany)
Ph.D. - University of Frankfurt (Germany)
Editor in Frankfurt
Instructor and Assistant Professor, Oberlin College.

Demers, Richard M. - Assistant Professor: Germanic Languages and Linguistics

B.A. - Oregon State University
M.A. and Ph.D. - University of Washington.

Peter Klaus - Assistant Professor: Romanticism, modern literature

University of Frankfurt (Germany)
University of Munich (Germany)
Ph.D. - University of Frankfurt (Germany)
Assistant Professor, University of Kansas.

Haupt, Johannes - Assistant Professor/Instructor: Classical German literature, German philology

Karl Marx University (Germany)
Free University (Germany)
Candidate for Ph.D., Rice University

Formerly part-time; appointed full-time, 1968-69.

Menz, Egon - Assistant Professor/Instructor: Aesthetics, Comparative Literature, German Drama

M.A. - (Staatsexamen) - University of Tubingen (Germany)
Candidate for Ph.D., University of Tubingen (Germany).

Rothe, Wolfgang - Visiting Lecturer:* Modern German Literature, Literary Sociology

University of Marburg (Germany)
University of Freiburg (Germany)
Ph.D. - University of Heidelberg (Germany)
Publisher of Wolfgang Rothe Verlag
Editorial work with A. Francke Verlag, Bern, Switzerland.

History (9)

Derfler, Leslie - Associate Professor: Modern French History

B.A. - City College of New York
M.A. and Ph.D. - Columbia
Instructor, City College of New York
Assistant Professor, Associate Professor, Carnegie-Mellon University.

Hernon, Joseph M. - Assistant Professor: Modern British History

B.A. - Catholic University
Ph.D. - Trinity College (Dublin)
Instructor, Ohio State University
Assistant Professor, Catholic University of America
Visiting Assistant Professor, University of Maryland
Phi Beta Kappa.

Oates, Stephen B. - Assistant Professor: Civil War and reconstruction

B.A. and M.A. - University of Texas
Candidate for Ph.D., University of Texas
Phi Beta Kappa.

Rearick, Charles W. - Assistant Professor: French Intellectual History, Western Civilization

B.A. - College of Idaho
M.A. and Ph.D. - Harvard.

Shipley, Neal R. - Assistant Professor: English History (Tudor-Stuart Period)

A.B. - Grove City College
A.M. and Ph.D. - Harvard
Assistant Professor, University of Tennessee.

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* Spring Semester, 1968-69.

Bittel, Ronald D. - Assistant Professor/Instructor: Modern European History

B.A. - Manhattan College
M.A. - Washington University
Candidate for Ph.D., Washington University.

Jones, Robert E. - Assistant Professor/Instructor: Russian History

B.A. - Lafayette College
Candidate for Ph.D., Cornell.

Nissenbaum, Stephen - Assistant Professor/Instructor: American Intellectual History

B.A. - Harvard
M.A. - Columbia University
Candidate for Ph.D., University of Wisconsin.

Van Kley, Dale K. - Instructor: French History, Age of the Baroque, Western Civilization

A.B. - Calvin College
M.A. - Yale
Candidate for Ph.D., Yale.

hilosophy (4)

Ackermann, Robert J. - Professor: Philosophy of Science, Inductive Logic

A.B. - Capital University
M.A. - Ohio University
Ph.D. - Michigan State University
Instructor, Washington State University
Assistant Professor, University of Pennsylvania
Fulbright Lecturer, Exeter University (England)
Associate Professor, Washington University.

Sobel, Jordan H. - Visiting Associate Professor: Moral Philosophy

B.S. - University of Illinois
M.A. - State University of Iowa
Ph.D. - University of Michigan
Assistant Professor, Wayne State University
Instructor, Princeton
Assistant Professor, University of California at Los Angeles.

DeVos, Peter A. - Visiting Assistant Professor/Instructor:* Seventeenth Century Philosophy

A.B. - Calvin College
M.A. - Brown University
Candidate for Ph.D., Brown University.

Brown, Robert R. - Visiting Lecturer:* Philosophy of the social sciences

B.A. - University of New Mexico
Ph.D. - University of London (England)

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* Spring Semester, 1968-69.

Romance Languages (5)

Loiseau, Jean - Visiting Professor:* French civilization and culture, English and European Renaissance

Licentiate in Arts, Diplomate in Advance Studies (English), Agregation (English) and Ph.D. - University of Paris (France)
Instructor, Montpellier Lyceum
Lecturer, Trinity College
Instructor, Toulouse Lyceum
Assistant Professor, Associate Professor, Rennes University
Professor, Dean of College of Arts and Sciences, Bordeaux University.

Soons, C. Alan - Visiting Associate Professor: Golden Age Spanish Literature

B.A. and M.A. - University of Sheffield (England)
Assistant, University of St. Andrews (Scotland)
Lecturer, University College of the West Indies at Mona
Senior Lecturer, University of the West Indies at Mona.

O'Connell, David J. - Assistant Professor: Medieval French Language and Literature

A.B. - St. Peter's College
M.A. and Ph.D. - Princeton.

Goar, Robert J. - Assistant Professor/Instructor: Classical languages, Latin

A.B. and M.A. - Harvard
Candidate for Ph.D., Harvard

Pedroni, Peter N. - Instructor: Italian language and literature

B.A. - Yale
Candidate for Ph.D., Rutgers.

Slavic Languages and Literatures (2)

Levin, Maurice I. - Associate Professor: Slavic Linguistics

A.B. - Boston University
A.M. and Ph.D. - Harvard
Assistant Professor, Chairman, Bowdoin College
Assistant Professor, Assistant Chairman, Indiana University.

Fischer, Peter A. - Assistant Professor: 20th and 19th century literature

A.B. and M.A. - Indiana University
Ph.D. - Harvard
Assistant Professor, State University of New York at Oswego
Phi Beta Kappa.

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* Fall Semester, 1968-69.

Economics (3)

Smith, Vernon - Visiting Professor: Microeconomic Theory, Decision Theory

B.S.E.E. - California Institute of Technology
M.A. - University of Kansas
Ph.D. - Harvard
Assistant Professor, Associate Professor, and Professor, Purdue University
Visiting Professor, Brown University.

Treyz, George - Assistant Professor: Mathematical Economics, Econometrics, Macro Theory

A.B. - Princeton
Ph.D. - Cornell
Assistant Professor Bryn Mawr and Haverford Colleges.

Tsao, Che S. - Assistant Professor: Mathematical Economics, Econometrics, Theory

B.S. - Chung Hsing University (Taiwan, China)
M.S. - Colorado State University
M.S. and Ph.D. - University of Wisconsin
Research Scientist, George Washington University.

Government (2)

Connolly, William E. - Assistant Professor: Political Theory

B.A.,M.A., and Ph.D. - University of Michigan
Assistant Professor, Ohio University.

Hinckley, Barbara A. - Assistant Professor: Political Parties, Legislative Process

A.B. - Mount Holyoke College
Ph.D. - Cornell
Phi Beta Kappa.

Psychology (14)

Appley, Dee G. - Professor:* Counseling and Clinical Psychology

A.B. - University of Denver
M.A. and Ph.D. - University of Michigan
Assistant Professor, Counselor, Connecticut College for Women
Lecturer, Clinical Psychologist, Southern Illinois University
Director, Psychological Services; Associate Professor, York University, (Canada).

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* Part-time appointment.

Helson, Harry - Professor: Sensation and Perception

B.A. - Bowdoin College
Ph.D. - Harvard
Instructor, Cornell University
Instructor, University of Illinois
Assistant Professor, University of Kansas
Associate Professor, Professor, Chairman, Bryn Mawr
Professor, Chairman, Brooklyn College
Professor, University of Texas
John C. Peterson Regents' Professor, Kansas State University
Distinguished Visiting Professor, York University (Canada)
Phi Beta Kappa.

Purcell, Kenneth - Professor: Clinical Psychology

B.A. and Ph.D. - University of Nebraska
Internship, Franklin Roosevelt NP Hospital
Chief Psychologist, Army Mental Hygiene Clinic and Hospital
Psychiatric Service, Fort Dix
Director, Kentucky Training Program in Clinical Psychology
Assistant Professor, University of Kentucky
Assistant Clinical Professor of Psychology, Colorado School of Medicine
Director, Behavior Science Division, Children's Asthma Research Institute and Hospital, Denver, Colorado.

Steiner, Ivan D. - Visiting Professor:* Social Psychology

A.B. - Central Michigan College
M.A. and Ph.D. - University of Michigan
Assistant Professor, Florida State University
Visiting Professor, University of Wisconsin
Assistant Professor, Associate Professor, Professor, Associate Dean of Graduate College, Head, Division of Social and Differential Psychology, University of Illinois.

Clifton, Charles E., Jr. - Associate Professor: Psycholinguistics, Developmental Psychology

A.B. - Stanford University
Ph.D. - University of Minnesota
Assistant Professor, University of Iowa.

Phillips, Jeanne S. - Associate Professor: Clinical Psychology

A.B. and Ph.D. - Washington University
Director, Psychology Outpatient Clinic, Consultant, Multnomah County Hospital, Clinical Faculty, School of Nursing, University of Oregon Medical School

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* No stipend.

Instructor, Assistant Professor, Associate Professor,
University of Oregon Medical School
Visiting Lecturer, University of Oregon
USPHS Special Research Fellow, Maudsley Hospital (London)
and University of California at Santa Barbara.

Carlson, Neil R. - Assistant Professor: Physiological Psychology

A.B., A.M., and Ph.D. - University of Illinois
USPHS Postdoctoral Fellow, University of Iowa.

Cashdan, Sheldon - Assistant Professor: Clinical Psychology

B.S. - City College of New York
M.A. and Ph.D. - University of North Carolina
Assistant Professor, Indiana University.

Clifton, Rachel K. - Assistant Professor:* Child Psychology, Psychophysiology

B.A. - Berea College
M.A. and Ph.D. - University of Minnesota
NICHD fellowship, University of Wisconsin and University of Iowa
Research Associate, University of Iowa.

Turner, Castellano B. - Assistant Professor: Counseling and Clinical Psychology

B.A. and M.A. - DePaul University
Ph.D. - University of Chicago
Clinical Instructor, University of Chicago
Program Psychologist, Manteno State Hospital, Illinois
Program Director, Manteno State Hospital
Research Associate, University of Chicago.

Purcell, Claire - Assistant Professor:* Clinical Psychology

B.A., M.A., and Ph.D. - University of Nebraska
Staff Psychologist, University of Colorado.

Daehler, Marvin W. - Assistant Professor/Instructor: Developmental and educational psychology

A.B. - University of Illinois
M.A. - University of Minnesota
Candidate for Ph.D., University of Minnesota.

Danielson, John T. - Assistant Professor/Instructor: Sensation and Perception, Physiological Psychology

B.S. - Rensselaer Polytechnic Institute
M.S. - Brown University
Candidate for Ph.D., Brown University.

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art-time appointment.

Zellner, Miriam - Postdoctoral Research Associate and Part-time Lecturer: Social Psychology

B.A. - City University of New York
Candidate for Ph.D. - Columbia University
Phi Beta Kappa.

Sociology-Anthropology (5)

Howard, Perry H. - Visiting Professor:* Social Stratification, Political Sociology

A.B. - Harvard
M.A. and Ph.D. - Louisiana State University
Assistant Professor, Memphis State College
Assistant Professor, North East Louisiana State College
Associate Professor, Louisiana State University of New Orleans
Associate Professor, Louisiana State University at Baton Rouge

Hollander, Paul - Associate Professor: Political Sociology

B.A. - London School of Economics and Political Science
A.M. - University of Illinois
M.A. and Ph.D. - Princeton University
Assistant Professor, Harvard.

Mehta, Surinder - Associate Professor: Human Ecology, Urbanization

B.A. and M.A. - University of Oregon
Ph.D. - University of Chicago
Assistant Professor, Brown University
Assistant Professor, University of Pennsylvania.

Salzmann, Zdenek - Associate Professor: Anthropological Linguistic

Charles University (Czechoslovakia)
M.A. and Ph.D. - Indiana University
Headmaster and Director, Verde Valley School
Head, Anthropology Department, The Phillips Exeter Academy.

Armelagos, George J. - Assistant Professor: Physical Anthropology

B.A. - University of Michigan
M.A. - University of Colorado
Candidate for Ph.D., University of Colorado
Instructor, Assistant Professor, University of Utah.

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* Spring Semester, 1968-69.

ny (3)

Ahmadjian, Vernon - Professor: Lichenology

A.B. and M.A. - Clark University
Ph.D. - Harvard
Assistant Professor, Associate Professor, and
Professor, Clark University.

Bierhorst, David - Professor: Morphology and Anatomy

B.S. and M.S. - Tulane University
Ph.D. - University of Minnesota
Instructor, University of Minnesota
Assistant Professor, University of Virginia
Assistant Professor, Associate Professor, Cornell.

Klekowski, Edward J., Jr. - Assistant Professor: Experimental Pteridology and Genetics

B.S. and M.S. - North Carolina State University
Ph.D. - University of California at Berkeley.

robiology (1)

Wilder, Martin S. - Assistant Professor: Pathogenic Bacteriology, Biochemistry, mechanism of pathogenesis

B.S. - Brooklyn College
M.A. and Ph.D. - University of Kansas
NAS Postdoctoral Research Associate, Fort Detrick.

ogy

No appointments.

PHYSICAL SCIENCES (10)

Biochemistry (1)

Parsons, Peter - Assistant Professor: Nucleic Acid Biochemistry

A.B. - Colby College
Ph.D. - University of Pittsburgh
USPHS Postdoctoral Fellow, Dartmouth College
USPHS Postdoctoral Fellow, State University of New York at Stony Brook.

Chemistry (1)

Collins, Frances W. - Visiting Assistant Professor: General Chemistry

B.A. - Georgetown College
Ph.D. - Massachusetts Institute of Technology
Instructor, Assistant Professor, Mount Holyoke College
Instructor, Holyoke Community College.

Geology and Geography

No appointments.

Physics and Astronomy (8)

Freytag, Dietrich R. - Associate Professor: High Energy Experimental Physics

Ph.D. - University of Bonn (Germany)
Fellow, Research Associate and Staff Member at CERN (Geneva).

Huguenin, G. Richard - Associate Professor: Radio Astronomy

S.B. - Massachusetts Institute of Technology
Ph.D. - Harvard
Assistant Professor, Senior Research Fellow, Lecturer, Harvard.

Peterson, Gerald - Associate Professor: Experimental Nuclear Physics

B.S. and M.S. - Purdue University
Ph.D. - Stanford University
Research Associate, Assistant Professor, Yale.

Dent, William A. - Assistant Professor: Radio Astronomy

B.S. - Case Institute of Technology
M.S. and Ph.D. - University of Michigan
Research Associate, Lecturer, University of Michigan.

Hoffman, Allan R. - Assistant Professor: Experimental Solid State Physics

B.E.P. - Cornell University
M.S. - University of Illinois
Ph.D. - Brown University
Research physicist, Texas Instruments, Inc.
Research Associate, Brown University.

Walker, James F. - Assistant Professor: Nuclear Theory

B.S., M.S., and Ph.D. - University of Minnesota
Assistant Research Scientist, New York University
D.S.R. Research Staff, Massachusetts Institute of Technology.

Madan, Rabinder N.- Research Associate and Lecturer: High Energy Theory

B.Sc. and M.Sc. - Delhi University (India)
M.A. and Ph.D. - Princeton University
Research Associate, National Physical Laboratory, Delhi and University of California at Santa Barbara.

Tucker, Robin W. - Research Associate and Lecturer: High Energy Theory

B.A. - Cambridge University (England)
Candidate for Ph.D., Cambridge University

MATHEMATICS AND STATISTICS (17)

Stone, Marshall H. - George David Birkhoff Professor: Analysis, Quantum Theory, Logic, Algebra and Topology.

A.B., A.M. and Ph.D. - Harvard
Instructor, Assistant Professor, Associate Professor, and Professor and Chairman, Harvard
Associate Professor, Yale
Chairman and Andrew MacLeish Distinguished Service Professor, University of Chicago
Phi Beta Kappa
National Academy of Sciences

Wang, J. K. - Associate Professor: Analysis

B.S. - National Taiwan University
Ph.D. - Stanford University
Associate Professor, Professor, National Taiwan University

Hedlund, James H. - Assistant Professor: Complex Analysis

B.A. - Cornell
M.A. and Ph.D. - University of Michigan.

Hurt, Norman E. - Assistant Professor: Quantum Field Theory

Ph.D. - University of Chicago
NATO Postdoctoral fellow, University Libre de Bruxelles (Belgium)
Visiting Member, Courant Institute of Mathematical Science

Ku, Hsu-Tung - Assistant Professor: Transformation Groups

B.S. - Taiwan Normal University
M.S. and Ph.D. - Tulane University
Institute for Advance Study, Princeton.

Pool, James C. T. - Assistant Professor: Applied Mathematics, Mathematical Foundations of Quantum Physics

A.B. - University of Kansas
Ph.D. - State University of Iowa
Senior Research Scientist, Ford Motor Co.
Assistant Mathematician, Argonne National Laboratory.

Smits, Th. H. M. - Assistant Professor: Ring Theory

M.A. and Ph.D. - University of Delft (Netherlands)
Assistant Professor, University of Delft.

Joiner, Harry F. II - Assistant Professor/Instructor: Analysis

B.A. - Texas Christian University
M.S. - Florida State University
Candidate for Ph.D., Florida State University.

King, Larry M. - Assistant Professor/Instructor: Topological groups and topological dynamics

B.S. - Brooklyn College
M.A. - University of Maryland
Candidate for Ph.D., University of Maryland
Phi Beta Kappa

McGuigan, Robert A., Jr. - Assistant Professor/Instructor: Functional Analysis

B.A. - Carleton
Candidate for Ph.D., University of Maryland.

St. Mary, Donald F. - Assistant Professor/Instructor: Differential Equations

B.S. - McNeese State College
M.A. - University of Kansas
Candidate for Ph.D., University of Nebraska.

Storey, Albert J. - Assistant Professor/Instructor: Algebra and Machine Theory

B.A. - Washington and Lee University
M.S. - University of Miami
Candidate for Ph.D., University of Miami

Egan, Lois E. - Instructor: Undergraduate teaching

B.A. - College of Saint Elizabeth
Candidate for M.A. - University of Massachusetts.

Maecher, John - Instructor: Undergraduate teaching

B.S. and M.S. - University of Miami
Intermediate Scientist, Litton Systems, Inc.
Instructor, Tuskegee Institute.

Maulucci, Ruth A. - Instructor: Undergraduate teaching, geometry

B.A. - College of New Rochelle
M.A. - University of Michigan
Instructor, Indiana State University.

Picard, Gloria C. - Instructor: Undergraduate teaching

B.A. - College of Our Lady of the Elms
Candidate for M.A. - University of Massachusetts.

Pollino, George E. - Instructor: Undergraduate teaching

B.S. and M.A. - University of Massachusetts.

istics (1)

Skibinsky, Morris - Professor: Mathematical Statistics

B.S. - City College of New York
M.A. and Ph.D. - University of North Carolina
Assistant Professor, Associate Professor, Purdue University
Research Associate and NSF Science Faculty Fellow, University of California at Berkeley
Mathematician, Brookhaven National Laboratory.

A N N U A L R E P O R T

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SCHOOL OF BUSINESS ADMINISTRATION

UNIVERSITY OF MASSACHUSETTS

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ANNUAL REPORT, 1967-1968
SCHOOL OF BUSINESS ADMINISTRATION
UNIVERSITY OF MASSACHUSETTS

WENDELL R. SMITH, DEAN
(January - July, 1968)

PREFACE

The development of this Report has been a collaborative effort on the part of John T. Conlon, who was Acting Dean July through December, 1967, and Wendell R. Smith, who became Dean of the School of Business Administration on January 2, 1968. Because neither of the collaborators has been in intimate contact with the administrative details of the operation of the School over time, the Report will emphasize the current status of the School and the problems and opportunities that we foresee in the future.

As the new Dean of the School, I would like to express my sincere respect for Dean Kirshen's substantial contribution to the University of Massachusetts in developing a solid foundation upon which a truly outstanding School of Business Administration can be built. His standards of excellence and devotion to the School have provided a legacy for which I am truly grateful. Similarly, Acting Dean Conlon's service in guiding the School through the transition was indeed meritorious. It is my hope that I will be able to maintain the forward thrust that has been generated toward the specification and realization of new goals that now become feasible because these men worked wisely and well.

Additionally, I wish to express my thanks for the splendid support that I have received from the Provost and other members of the Administration during these months of orientation.

I begin my period of service to the University of Massachusetts with a strong resolve to broaden the reach of the School of Business Administration within the University, the Commonwealth, and the academic and business communities at large; while maintaining standards

of academic excellence that have already been established. Given the financial support that it will take to do the job, the School of Business Administration is now in a position to make a substantially enhanced contribution.

Toward this objective I have established a Planning and Development Task Force which will meet and work throughout the Summer months. The Task Force is charged with the responsibility of defining specific objectives to be achieved by 1974 and of developing programs of implementation. This effort will involve a review of policies, organization, and programs dealing with all aspects of the teaching, research, service, and development functions of the School.

STATISTICAL INFORMATION

1. Appropriation for the Fiscal Year:

Code		1965 - 1966	1966 - 1967	1967 - 1968
03		$21,900.00	$20,700.00	$21,000.00
10		3,800.00	6,000.00	8,000.00
11		100.00	900.00	- - - -
12		1,200.00	2,200.00	1,500.00
13		3,200.00	7,000.00	10,750.00
14	(14-1)	4,660.00	9,200.00	10,000.00
15		1,000.00	3,500.00	2,000.00
16		100.00	686.00	700.00

2. Personnel: Number in Each Rank

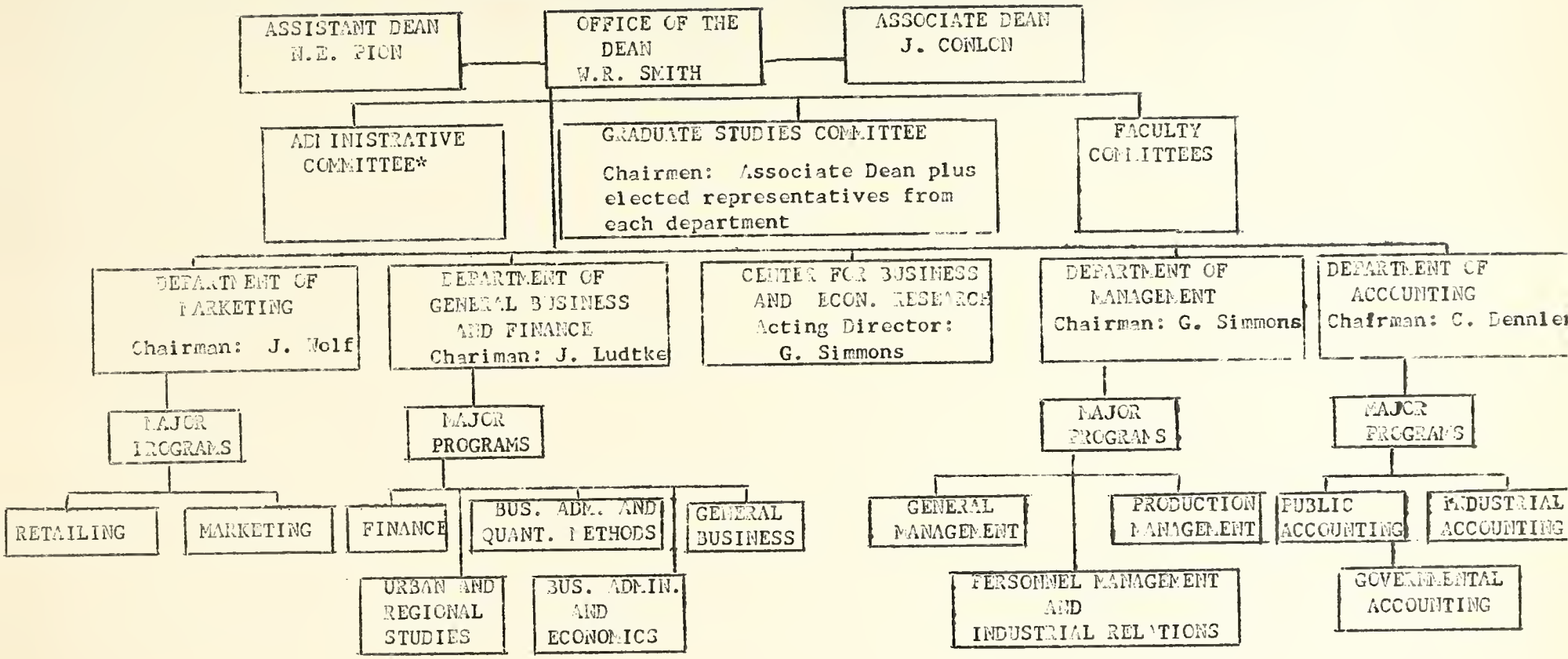
	As of September		
	1965	1966	1967
Professors	8	9	12
Associate Professors	11	13	13
Assistant Professors	13	15	21
Instructors	5	5	3
Lecturer	--	1	2
Total faculty (excluding Dean)	37	43	51

NOTE: These figures include faculty on leave of absence:

One Professor and One Assistant Professor in 1965
Two Professors in 1966
One Professor and One Assistant Professor in 1967

Organizational Chart
June, 1968

SCHOOL OF BUSINESS ADMINISTRATION



*Includes the Dean, Associate Dean, Department Chairmen, and Director of the Center for Business and Economic Research.

4. Students:

	As of September		
	1965	1966	1967
a) Juniors and Seniors by Major			
Accounting	148	143	169
General Business and Finance	73	86	129
Management	148	124	158
Marketing	78	100	152
Undeclared Juniors*	---	71	98
TOTAL	447	524	706
Sophomores*	260	316	344
Freshmen*	196	303	237
Graduate Students on Campus	103	87	137
TOTAL SBA students on campus	1006	1230	1424
Graduate Students at Pittsfield	45	24	48

*Students select majors not later than the end of the first semester of the Junior year.

(b) Number of Students Taught
(majors and others - - class enrollments)

	2402	2707	3250

ACTIVITIES AND PLANS

5. Faculty Publications, Research Grants, Research Projects and Other Professional Activities

In summary, I am pleased to report that this year the School of Business Administration Faculty has the following publications record:

Articles published or accepted for publication -- 40.
Books published -- 7.
Books scheduled for publication -- 2.
Books under contract -- 7.

This is a conservative view of the publications output of the School. It takes into account only articles in recognized professional or academic journals; and is limited to contributions that have been published, or barring some unforeseen development, will be published. Many other manuscripts are in various stages of preparation.

Additionally, our Faculty have been exceedingly well represented on the Programs of the meetings of academic and professional Associations both locally and on a national basis. The majority of our senior Faculty members, and a growing percentage of our younger men, are well recognized by their own professional groups. Several hold offices in their Associations. Many are active on committees of various sorts. Examples are Backer and Corcoran in Accounting, Simmons and Young in Management, Wolf and Venkatesan in Marketing, and Osborn and Cheng in General Business and Finance. John Conlon, our Associate Dean, continues to be active in the area of Mediation and Arbitration of Labor Disputes. My own activities as Consultant to the Secretary of Commerce and Chairman of the National Marketing Advisory Committee continue.

The activities mentioned above reflect favorably upon the reputation of the School in both the academic and business communities, and knowledge of them is stimulating to our students at both the graduate and undergraduate levels. They contribute substantially to the foundations for further development referred to in the Preface of this Report.

Unlike the faculties of many Schools of Business Administration located in urban areas, our Faculty's involvement in consulting activities is relatively limited. While it is easy for consulting activities to get out of hand, some involvement on the part of faculty members who are so inclined is highly desirable if we are to maintain effective liaison with the business community. At the most recent Conference of the American Association of Collegiate Schools of Business, some concern was voiced for the fact that increasingly Business School faculties are coming to be made-up of young men whose educational preparation for teaching has not been interrupted by periods of business activity. In our School we will attempt to counteract this trend by helping our Faculty members establish consulting relationships of the type that will contribute to their teaching, research, and service activities in meaningful ways. Full activation of the Center for Business and Economic Research will facilitate this activity and will also help greatly in the funding of faculty research of a fundamental character.

The Appendices of this Report include greater detail on faculty activities organized on a departmental basis.

Against the background of my experience elsewhere, including the Wharton School of the University of Pennsylvania, I can truthfully say that Faculty quality and activity at the University of Massachusetts School of Business Administration is at an exceedingly high level. The cutting edge of this resource can remain sharp and its influence will be more broadly felt almost in direct proportion to our ability to provide the research support that is necessary to sustain the activity and to maintain an atmosphere of intellectual excitement.

I should also mention the extraordinary level of involvement of the School of Business Administration Faculty in University-wide activity. Many are effectively involved in University Committees, several are serving the University as consultants to some of its Administrative activities.

6. Major Accomplishments

In addition to what already has been mentioned, our Faculty recruiting activities this year have been quite successful. Next fall we will welcome new Faculty members from Columiba, Penn State, Carnegie-Mellon, Iowa, Illinois, and other leading institutions. The School has now reached a point where it is in a position to attract qualified faculty members against nation-wide competition from older and more established schools. This hard-won status too will be lost if we are not in a position to support research and related programs that faculty of this quality regard to be normal.

Early last Fall Associate Dean Conlon appointed an Ad Hoc Committee on Quantitative Methods to study the action that the School of Business Administration should take to make certain that its students are well equipped to perform in a business world increasingly characterized by the mathematical model and the computer. This Committee, chaired by Professor Eugene Kaczka, made its Report this Spring and made recommendations for increasing the mathematics and computer-related requirements for Business degrees at all levels. These recommendations were approved by the Faculty in mid-May, and a program of gradual implementation and faculty retooling is underway. This action will place the University of Massachusetts in the vanguard of Schools that are effectively assimilating the new technology the impact of which will soon be upon us.

I am also pleased to report the informal organization of research interest groups within the School that cut across traditional departmental lines. Such groups are now active in the areas of quantitative techniques, behavioral science, and environmental studies. It could turn out to be the case that such interest groups, beginning on this informal basis, may be predictive of the formal departmental structures of the future.

7. Special Programs

The most exciting special program that is being developed within the School of Business Administration for activation next year has to do with the role of the Business School in the development of education opportunities for the culturally deprived. Under the leadership of Professor Lawrence Johnson of the Marketing Department, several task forces are at work on BBA and MBA Programs for Negro students which will soon be presented for approval.

This year we have 41 JETS (students in our Junior Executive Training Program), most of them from Western Europe. For the past nine years this Program has been sponsored by The Experiment in International Living. It has turned out to be an exciting experience for students and Faculty alike. We have recently held preliminary conversations with executives of The Experiment in International Living concerning the possibility of refresher or alumni programs for people who have participated in this activity on the U. Mass. campus over the last nine years. Professor Robert Lentilhon serves as Coordinator of this Program.

The School Colloquium was activated again this year and brought five outstanding speakers to the campus. Up to now the Colloquium Series has been managed by a Faculty Committee. Next year, to get more student involvement in the Program, it will be operated by the local Chapter of Beta Gamma Sigma, our national honor society.

Under the leadership of Associate Dean Conlon another Arbitration Conference was held on the campus this year. Additionally, in cooperation with the University of Michigan, a special Seminar in Labor Relations for School Administrators was held here.

8. Future Plans and Needs

While our current planning for the future involves all aspects of the teaching, research, service, and development activities of the School; considerable emphasis is being placed upon the further expansion and development of the MBA Program. Throughout the country the MBA degree is coming to take precedence over the BBA as the truly professional degree for students of Business Administration. Increasingly Business Schools tend to be evaluated by their sister institutions and by the business community in terms of the number and quality of their MBA's. This is not to say that interest in the undergraduate program is diminishing. Neither does it indicate any diminution in enthusiasm for the developing program at the Ph.D. level. It does suggest the conclusion that our development at the MBA level has lagged somewhat behind. This will necessarily involve promotional activity on the part of the School. The students we seek to attract are not only our own undergraduates, but undergraduates currently at other institutions in Massachusetts and elsewhere. We are also exploring the possibility of joint MBA degrees that might be offered in collaboration with other Schools in the Five-College group. Additionally, we are mindful of the role that we can play in developing joint programs with other Schools and Departments on the campus such as Education, Political Science and Journalism. We are particularly interested in such collaboration at the Graduate level to start.

The Planning and Development Task Force referred to in the Preface of this Report is made-up of the School's Administrative Committee supplemented by four faculty members. However, all of the meetings of the Task Force are open to any Faculty member who wishes to attend. In brief, the Task Force is looking at the School's activities: teaching, research, service, and development (internal and external communication); with reference to the various audiences or publics with which we are concerned. Our Faculty is, of course, the primary resource available to us. The planning goal is to consider how our activities can be of maximum benefit to and best received by the following groups: students, alumni, the University as a whole (as represented by its Administration), the business community, governmental units, other units of the University, and society in general. Consideration of this two-way grid (activities on one axis and audiences on the other) provides the framework within which to determine our obligations and objectives to each of the groups represented as determinants of the activities or mix of activities in which we should be engaged. The Task Force hopes to have

a preliminary report ready for discussion by the Faculty early in the Fall.

Out of all this will come the basis for a new look at our curriculum, a review at our orgainzational structure, and a more precise profile the kind of faculty that we should be attempting to build. We have selected 1974 as the planning horizon for this activity.

As a new Dean at the University of Massachusetts I am, of course, concerned about the period of financial stringency in which the University now finds itself. I am concerned about the extent to which meaningful plans for the future may be frustrated. Even more basically, I am concerned about our ability to hold the gains that have been made over the last several years which have been achieved in part because of the atmosphere of enthusiasm and buoyancy that has prevailed within the University in general and in the School of Business Administration in particular. The School of Business Administration is on the threshold of becoming a major factor in higher education for business and for administration more broadly defined. It is at the point where, given adequate support, it can make a major contribution to the greatness of the University and the welfare of the Commonwealth.

Respectfully submitted,

Wendell R. Smith

Wendell R. Smith, Dean
June 30, 1968

WRS:mab

A P P E N D I C E S

Grants, Research and
Faculty Activity

(Excerpts Departmental Reports)

APPENDIX A

DEPARTMENT OF ACCOUNTING: Professor Carl Dennler, Jr., Chairman

The acceptance of the new computer course, Acctg. 251-551, was a key addition to the curriculum. Along with Acctg. 100, the business major is now provided with six hours of business-oriented computer science courses. It is also an important course in the development of an Information Systems major - a joint project with the Management Department.

Research writing, professional development, public relations, and service activities were much improved this year. Although details are to be found appended to this report, it should be noted that Morton Backer has continued his productivity in these areas; that Wayne Corcoran has contributed heavily to the total output; and that as Editor of the Mass CPA Review, Tony Krzystofik has been able to encourage other members of the Department to submit materials for publication.

Under the guidance of Wayne Corcoran, the Department participated in a series of math seminars. This project was only partially successful, however it did provide experience which should be useful in organizing the summer series of seminars.

At the request of the Department of Industrial Engineering, Tom Morrison taught their Budgeting course. This course had been taught by one of their own staff members until this year. We have been asked to teach this course again next year.

The Accounting Association sponsored two important and successful programs. The first was a program designed to provide students with information relative to the different areas of employment - governmental, public accounting, industrial accounting, etc. The second was a colloquium having Leonard Spacek from Arthur Andersen as the speaker. Students and faculty of other schools in the area were invited to attend.

In conclusion, it appears that we already have a competent and active Accounting Department. We have, it appears, reached a point where we can be very selective in adding additional staff. The addition of two or three key people in the near future could make the Department an outstanding one.

A. Publications

(1) Books:

A. Wayne Corcoran, Mathematical Applications in Accounting, Harcourt, Brace & World, Inc., 1968

Readings in the Methodology of Operations Research: An Accounting Emphasis, Ed. by A. Wayne Corcoran, National Association of Accountants, 1968

Frank A. Singer, Accounting Supplement, (multilith) University Store, Amherst, Mass.

Morton Backer and Walter McFarland, Financial Reporting for Segments of A Business, National Association of Accountants, 1968, 150 pp.

Morton Backer and Lyle Jacobsen, Contabilidad de Costos: Un Enfoque Administrativo de Gerencia, McGraw-Hill Book Co., January 1968, 750 pp.

(2) Articles Published:

A. Wayne Corcoran and Ching-Wen Kwang, "Set Theory and Accounting Analysis," Management Accounting, September, 1967, pp. 7-18.

A. Wayne Corcoran, "Applied Mathematics and Accounting: Commentary on the Psychological Problems of Learning the One and the Intellectual Problems of Renewing the Other," Readings in the Methodology of Operations Research: An Accounting Emphasis, National Association of Accountants, 1968, 32 pp.

A. Wayne Corcoran, "Computers Versus Mathematics," Ibid, 20 pp.

Anthony T. Krzystofik, "The Institute Staff Training Program," Mass. CPA Review, June-July 1967, Vol. 41, pp. 56-73.

James O'Connell, "Massachusetts Accounting Careers Council: A Progress Report," Mass CPA Review, Aug.-Sept., 1967.

Frank A. Singer, (co-author), "Procedure Bancarie Per L'Analisi Delle Richieste Di Prestiti Commerciali," La Scuola in Azione, September-October 1967

(3) Book Reviews:

A. Wayne Corcoran, Review of Statistical Inference, (Mathematics for Management Series, Vol. 3), Richard D. Irwin, Inc., 1966, Journal of Accountancy, July 1967, pp. 87-88.

Morrison, Thomas A., Review of Tax Reform and the Alliance for Progress by Raynard M. Sommerfeld, The University of Texas Press, Austin, Texas, 1966, The Accounting Review, January 1968, pp. 213-214.

(4) Cases:

"Superior Duplicating Machines, Inc.," in Casebook for Management and Business Policy - A Systems Approach by Frank Greenwood, International Textbook Co., 1968, pp. 56-73. Case written by Anthony T. Krzystofik.

Singer, Frank A., "H.H. Scott, Inc.," Casebook for Management and Business Policy: A Systems Approach, by Frank A. Greenwood, International Textbook Company, 1968, pp. 73-84.

(5) Miscellaneous:

Anthony T. Krzystofik as co-editor of the Mass. CPA Review, contributed the following "Editor's Corner" essays:

"Professional Recruitment," Aug.-Sept., 1967
"Economics of an Accounting Practice," Oct.-Nov., 1967
"Dial-a-Tax Expert," Feb-March, 1968
"Compulsory Participation," Feb-March, 1968
"Examinations," April-May, 1968

(6) Chapters in Books:

Backer, Morton, "Role of Costs in Pricing," chapter in Pricing Policies and Practices, Elizabeth Marting, Ed., American Management Association, April, 1968.

Backer, Morton, "Accounting Theory, Measurement and Objectives," chapter in Accounting Theory, Canadian Chartered Accountants, February 1968.

(7) Publications in Process:

Financial Reporting and Security and Credit Decisions, by Morton Backer, to be published as a book in late 1968.

CPA Preparation, by Robert W. Lentilhon and John W. Anderson, to be published by South-Western Publishing Co., late this year or early 1969.

"Effect of the Investment Tax Credit on The Capitalize-Expense Decisions," by Thomas A. Morrison and Stephen L. Buzby, to appear in the July 1968 issue of The Accounting Review.

"Educational Technology - An Important New Direction for Research by Business Administration Faculty," an article submitted to Collegiate News and Views by Frank A. Singer.

"Monetary Forces as a Predictor of Stock Prices," by Thomas A. Morrison, an article accepted for publication in the Mass. CPA Review.

"A New Approach to Cost-Volume-Profit Analysis Involving Differential Calculus and Uncertainty," by Thomas A. Morrison and Eugene Kaczka, in final typing stage.

The NAA is currently considering the publication of a special monograph based upon Tom Morrison's dissertation on International Accounting.

Managerial Mathematics, a book being written by A. Wayne Corcoran.

"Dollar Value Retail Lifo - A Mathematical Computer Approach," by A. Wayne Corcoran and Richard Simpson.

"A Study of the Accounting Characteristics of Forty-Nine Industrial Firms," by Richard Simpson.

"Time-Series Analysis of Reported Earnings," by Frank Singer.

(8) Activities Related to Publishing:

Anthony Krzystofik is co-editor of the Mass. CPA Review.

Thomas Morrison reviewed two manuscripts: An Introduction to Taxation, Sommerfeld, Anderson, and Brock (Harcourt, Brace & World), and Taxes and Management Decisions, by Schrieber (MacMillan Company).

Carl Dennler, Jr. reviewed two manuscripts for Allyn and Bacon, Inc.

John Fitzgerald was Associate Director of the Manuscript Committee of the Springfield Chapter, NAA.

B. Research Grants

Provost's Grant for Research in Programmed and Computer-Assisted Instruction, ($2,000) was awarded to Frank Singer and George Simmons.

C. Professional Activities

(1) National Committees:

Morton Backer - AAA Committee on Accounting Courses in Liberal Arts Curriculum.
- AICPA Committee on Research & Development, Chairman.

Frank Singer - AAA Committee to Study the Impact of Behavioral Sciences on Accounting
- AAA Educational Research Committee.

(2) Regional or State Committees:

Anthony Krzystofik - Chariman, Publications Committee, Mass. Society of CPA's.

James O'Connell - Chairman, Mass. Accounting Careers Council.

(3) Other:

Wayne Corcoran designed and taught a course in Operations Research for the NAA.

Morton Backer was a panel discussant on two occasions: "The Impact of the Security & Exchange Commission Disclosure Requirements" at the Annual Meeting of the American Accounting Association; and, "Reporting for Conglomerates" at Tulane University.

Anthony Krzystofik was a discussion leader for the AICPA Staff Training Program at the University of Rhode Island. He also participated in the Pilot Mathematics Program for Accounting Professors sponsored by the AAA at Penn State University.

For the second consecutive year a graduate of the MS Program has won the Gold Medal awarded to the person scoring highest on the CPA exam in Massachusetts. This year, Sanford Gunn was awarded the medal and also received Honorable Mention for his test score on a national basis.

In addition to the preceeding specific activities, members of the Department presented papers or spoke to various other groups on and off campus during the year.

Six members of the Department attended the NE Regional Meetings of the AAA; five members attended the annual meetings at Penn State; and, additionally attended various other meetings and seminars: AICPA sponsored course on data processing; Northeastern University seminar on Changes in the Mass. Tax Laws; Ernst & Ernst Seminar for Educators; Touche-Ross Seminar for Educators; Aero-Space Education Seminar, etc.

(4) Future Plans:

Two members of the Department, Morton Backer and Tom Morrison, have been invited to participate in the program of the AAA at its annual meeting in August.

Frank Singer has been given encouragement by Mr. Venman, Assistant to the Provost, to submit a formal proposal to the Office of Educational Research for a research project with an estimated five-year duration.

A number of research activities and/or articles and books are being planned and written by members of the Department.

D. Major Speeches and Papers Presented:

Morton Backer - "Financial Reporting for the Conglomerate," Annual Meeting of the National Association of Accountants.

- "Financial Reporting for Security Investment and Credit Decisions," Regional meeting of the NAA.

Richard Simpson - "Sampling Techniques for Accountants," Springfield Chapter of the NAA.

A. Wayne Corcoran - "Applied Mathematics in Accounting," Springfield Chapter of the NAA.

APPENDIX B

DEPARTMENT OF GENERAL BUSINESS AND FINANCE: Professor James Ludtke, Chairman

Undergraduate Programs

Program in Business Administration and Quantitative Methods

The number of students majoring in this program has continued to increase at a rapid rate. In the class of 1967, only two students could be considered to have completed the requirements of this program; in the class of 1968 there were eight such students; and in the class of 1969, there are 24 students who identify themselves as majors in this program; and thirty-two students of the classes of 1970 and 1971 have indicated their intent to major in this program of study.

One of the more interesting features of this program is the incorporation of courses taught in departments outside of the School and the exposure of students to problems in the real world, e.g., problems considered important by participating business firms. All students majoring in this program are required to take, in their senior year, a semester of Independent Study and Research, and many elect to study quantitatively-oriented problems in nearby business firms. This approach exposes the students to actively operating problems and provides them with an opportunity to apply the knowledge they have acquired in their prior course work. Generally, the students work in small groups. From the view of participating firms, they are provided with objective investigations of real problems. Hopefully, the contacts being developed with these firms will improve student placement and provide financial support for faculty research.

In the academic year 1967-68, four students studied the lens grinding operations of the Electro-Optical Division of the Kollmorgan Corporation in Northampton. During the coming year, approximately ten students will be engaged in a project at the Massachusetts Mutual Life Insurance Company. During the fall semester the project will consist of a quantitative analysis of a cash flow system which had been recommended to the company by a leading consulting firm and put into effect this past year.

Mr. Roger Harper, Executive Vice President of Greenfield Tap and Die, has indicated his firm's desire to participate in this program, either as an active

participant or as a contact with other business firms in Western Massachusetts.

Three students in the quantitative program expect to earn credits under the course title, Management Internship, through summer positions. One of these students will be involved with United Fruit; another with CEIR; and the third with Massachusetts Mutual Life Insurance Corporation. The Department hopes that as many as ten such summer positions will be open in future years.

In closing, it should be pointed out that students who have completed this program of study have been well received by industry, and Mr. Kaczka has received numerous inquiries as to future availability of students.

Business Administration and Economics

This program, like that in Financial Management, continued to function very much as it has in previous years, with approximately 10 majors per class. Students who major in this program take the same required economics courses and the same number of economics courses as do the economics majors in the College of Arts and Sciences. The Department of General Business and Finance has had a good working relationship with the Department of Economics.

The Department of General Business and Finance loaned one man to the Department of Economics for the first semester, and a similar arrangement has worked out for the coming fall semester. The joint ad hoc committee of the School of Business Administration and the Department of Economics are in the process of reviewing course offerings in the related fields of real estate and urban economics to determine if a single course might better serve the needs of both the School and the Department of Economics.

Financial Management

The Financial Management program has been carried on this past year in much the same way as in previous years, with the major difference being the change of instructor in the one-year sequence in the area of investments. The instructor this past year has been Professor Pao Cheng, who has incorporated more quantitative analysis than was the case under the direction of Professor Ludtke and Assistant Professor Vernon Tessier.

During the year, three new courses in the area of insurance were developed, but the Department does not plan to offer them until 1969-70. While on the topic of insurance, it should be noted that Professor Osborn devoted considerable effort this past year to the building of contacts between the School and the insurance industry, with the result that one company has already entered into a program under which three students were offered summer employment opportunities of a constructive nature and a cash grant was made to the School to promote the development of faculty and programs.

The number of majors in this program has remained stable in the past few years, averaging ten per class. However, the senior level courses in the finance program tend to attract two to three times this number of students.

One of the highlights of the senior level courses in business finance was the visit of Mr. John Whitely, President of Amerace, who, before coming to the campus had studied 2 cases and while on campus led the classroom discussions. Student and faculty feedback were excellent, and the Department plans to increase these visits in the coming year.

General Business

The number of students in this program continues to average between 25 and 30 students per class, indicating the need for a program for students who have no desire to specialize in a functional area at the undergraduate level.

Review of this program is long overdue, and perhaps the time has come to develop a senior-year sequence of two courses to serve the needs of these students. Presently, they are required to complete Business and Its Environment. Many courses are not open to these students in this major, because either the students have not satisfied prerequisites or the courses are considered as being too specialized.

Urban and Regional Studies

This program has the smallest number of majors, with seven majors in the class of 1969. However, the number is deceptive, because the Department serves similar majors in other Departments. Also this program keeps the SBA faculty in close contact with faculty outside SBA and this fact alone makes the program worthwhile. Hopefully with the return of Assistant Professor Burak, progress can be made in the establishment of a joint program with the Department of Economics.

Service Courses

Many of the courses offered by the Department are essentially service courses to the total School. Certainly this is true for the three core courses (Financial Institutions, Corporation Finance, and Business Law I), and it is partially true for many of the other courses, such as transportation, real estate, insurance, and law. The Department continues to place considerable emphasis on undergraduate instruction, often assigning senior faculty to these courses. The Department has these courses under continuous review, and is open to suggestions from all staff members as to how these courses can be improved. The Department continues to offer special law courses for accounting majors and Public Health graduate students.

SERVICE TO THE UNIVERSITY

Faculty members of the Department of General Business and Finance continue to perform major roles on Faculty Senate Committees and other University Councils. The Chairman of the Department served as Secretary of both the Faculty Senate and University Faculty, and also assumed an active role on three Committees: Graduate Council, Rules Committee, and the Committee on Committees. Professor Osborn served as a member of both the Health Council and the Faculty Affairs Committee, and was instrumental in the adoption of disability income protection. He is currently engaged in studying the feasibility of a TIAA/CREF pension coverage for faculty. Professor Cheng served as a member of both the Tenure and Grievance Committee and the Research Council, and served as Secretary of the former. Associate Professor Kaczka served as a member of the Master Planning Committee, and the School can expect him to make a major contribution to this committee in coming years. Associate Professor Hartzler served as a member of the Academic Matters Committee. Associate Professor Silver served as a member of the Student Communications Board and is presently the Board's current chairman. Also, it should be noted that he served as a consultant to the University Administration on questions pertaining to "rights".

FACULTY-STUDENT RELATIONSHIPS

The Department devoted two of its Departmental meetings to the discussion of faculty-student relationships and held two open meetings with students as to what

kind of relationships they would like to see established. The net result was the establishment of informal weekly meetings between interested faculty and students. These meetings were held on Tuesday afternoons at four o'clock in the Faculty Lounge, with attendance ranging from three to twenty. The Department plans to continue these weekly meetings in the fall.

I. Publications During July 1, 1967 - June 30, 1968

ALLAN, HARRY T.

Review of A Programmed Introduction to the Study of Law: Part I: Case Skills by Charles D. Kelso, American Business Law Journal, Fall 1967, pp. 243-247.

BARGES, ALEXANDER

"Growth Rates and Debt Capacity," Finanical Analysts Journal, January-February, 1968, pp. 100-104.

"Drug Industry Profits," Financial Analysts Journal, May-June, 1968, pp. 75-83, (co-author, B. R. Hickey).

CHENG, PAO L.

"Wage Negotiation and Bargaining Power," Industrial and Labor Relations Review, Vol. 21, No. 2, June 1968, pp. 163-182.

HARTZLER, H. RICHARD

"The Ombudsman," American Business Law Journal, Vol. 5, Fall 1967, pp. 240-243.

KACZKA, EUGENE E.

"Managerial Climate, Work Groups, and Organizational Performance," Administrative Science Quarterly, Vol. 12, No. 2, September 1967, pp. 253-272, (co-author R. V. Kirk).

"Managerial Climate Organizational Performance," Proceedings of the Academy of Management, 1967. pp. (co-author R. V. Kirk).

PLATTNER, ROBERT H.

"State Regulatory Control of Dividend Policy," Public Utilities Fortnightly, February 15, 1968, pp. 29-31.

SILVER, ISIDORE

Books: Defending Criminal Cases, Practicing Law Institute, New York (contributing author).

Articles: "True-Blue Dick," Commonweal, April 5, 1968, pp. 65-68.

"The November Elections: Implications and Portents," Vol. 34, November 20, 1967, Congress Bi-Weekly, pp. 3-4.

"Crime in America," Vol. 35, February 5, 1968, Congress Bi-Weekly, pp. 10-12.

"Crime and Punishment," Vol. 45, March 1968, Commentary, pp. 68-73

Book Review: "MacBird or MacLear?" Vol. 34, October 16, 1967, Congress Bi-Weekly, pp. 20-21.

II. Manuscripts Accepted and Scheduled for publication in 1968

ALLAN, HARRY T.

"Legal Systems of Business Organizations: Analysis of Recent Research," American Business Law Journal, (co-author H. Richard Hartzler).

Review of The Dynamics of Law, (by James L. Houghtelling, Jr.) American Business Law Journal.

Introduction to Law, Scott, Foresman, & Co. (Scheduled for publication in Fall), (co-author, H. Richard Hartzler).

BELOVICZ, MEYER W.

"Utility and Decision Theory Concepts," in Readings in Quantitative Methods for Accountants, National Association of Accountants, (A.W. Corcoran, ed.)

CHENG, PAO L.

"Counting Partitions and Evaluating Probabilities of Events Related to Hypergeometric and Multinomial Probabilities," in Readings in Quantitative Methods for Accountants, National Association of Accountants, (A. W. Corcoran, ed.)

HARTZLER, H. RICHARD

"Legal Systems of Business Organizations: Analysis of Recent Research," American Business Law Journal, (co-author Harry T. Allan).

"The Business and Economic Functions of the Law of Contract Damages," American Business Law Journal.

Introduction to Law, Scott, Foresman, & Co. (Scheduled for publication in Fall), (co-author, Harry T. Allan).

KACZKA, EUGENE E.

"Managerial Climate, Work Groups and Organizational Performance," reprinted in J.M. Dutton and W. E. Starbuck, Computer Simulation of Human Behavior: Descriptive Models in Empirical Science, John Wiley (forthcoming 1968), (co-author, R. V. Kirk).

"Applications of Transforms to the Analysis of Dynamic Behavior," in Readings in Quantitative Methods for Accountants, National Association of Accountants, (A. W. Corcoran, ed.)

"Forecasting Models with Accounting Applications," Massachusetts CPA Review.

SILVER, ISIDORE

The President's Crime Commission, Cornell Law Review, October 1968.

Review of The Lawyers, Wisconsin Law Review, Spring 1968.

THEILMAN, WARD

Review of Maintaining and Restoring Balance in International Payments (by Fellner, Machlup, and Triffin), Journal of Finance.

"International Monetary Reform and the Price of Gold," Journal of Business and Economics.

III. Projects under contract and expected to be completed in 1968

CHENG, PAO and Sidney Claunch, Fundamentals in Probability, Statistics, and Decision Theory for Business Applications, (Boston, Mass.: Allyn & Bacon, Inc.)

IV. Projects under contract and expected to be completed in 1969

BARGES, ALEXANDER

Financial Forecasting, Prentice-Hall, Inc.

CHENG, PAO L.

Creative Management, International Textbook Co., (co-author, S. Michael).

KACZKA, EUGENE E.

Operations Analysis: A Simulation Approach, Allyn & Bacon, Inc.

Management Science and System Analysis, Holt, Rinehart & Winston.

Modeling and Simulation, Chapter in a book of original readings, Glencove Free Press, (M. Venkatesan, ed.)

OSBORN, GRANT

Life Insurance, Prentice-Hall, Inc. (co-authors, Kier and Hall).

SILVER, ISIDORE

The Great Advocates: A Social History of the American Criminal Lawyer, Prentice-Hall.

Introduction to Law, Scott, Foresman, Inc.

VI. Research Grants

ALLAN, HARRY T.

Ford Foundation Faculty Research Grant for the 1967-68 academic year, plus carry over of one small U of M Faculty Research Grant. Subject under study is: "The Complex Organization as a Law-Government System."

BELOVICZ, MEYER W.

"Treasury Bill Auction: Theory and Policy Implications", Faculty Research Grant.

HARTZLER, H. Richard

"Function of Warranties," U of M Faculty Research Grant.

"Construction of a Descriptive and Predictive Legal Theory of Organizations," (with Harry T. Allan) Faculty Research Grant.

KACZKA, EUGENE E.

"The Development of a Predictive Computer Model to Investigate Effects of a Rapidly Growing Industry on Land Usage and Values, Taxation, Community Services, and Employment in a Rural Community." (U of M Faculty Research Grant).

VII. Papers and Public Addresses

ALLAN, HARRY T.

Presented a short paper and served as panelist at the Fairfield University Symposium on The Teaching of Law in College, (February 17, 1968).

Presented two papers at the Syracuse University Executive Development Program, Corning, New York: "Antitrust Merger Policy and Corporate Expansion" (September 12-22, 1967). "Governement and Business," (April 19, 1968).

Presented a paper on "The USA - A Developing Society" at the Experiment for International Living Far East Student Leader Group Seminar, (April 29, 1968).

Presented a paper at the 44th Annual Meeting of the American Business Law Association, "Legal Systems of Business Organizations," (co-author, H. Richard Hartzler), August 1967.

CHENG, PAO L.

Presented a short paper and served as panelist in the business forecasting session of the District 9 Conference of the National Association of Purchasing Agents.

HARTZLER, H. RICHARD

Presented a paper at the 44th Annual Meeting of the American Business Law Association, "Legal Systems of Business Organizations," (co-author Harry T. Allen) August 1967.

Presented a short paper and served as panelist at the Fairfield University Symposium on The Teaching of Law in College, (February 17, 1968).

Presented one public address off-campus on the topic "False Alternatives and the Creative Mind."

Presented one public address on-campus on the topic, "Jurisprudence in a Nutshell."

KACZKA, EUGENE E.

Presented a paper on "Managerial Climate Organizational Performance" at the Academy of Management Meetings, December 1967 (co-author, R. V. Kirk).

Amherst Industrial Development Commission

"Effect of Growth of the University of Massachusetts in the Town of Amherst"

LUDTKE, JAMES B.

Served as moderator of panel on business forecasting session of the District of Conference of the National Association of Purchasing Agents.

OSBORN, GRANT (In addition to two addresses to local groups)

American Risk and Insurance Annual Meeting, Chicago, August 28, 1967

Merrimack Valley Life Underwriters Association, Lawrence, Mass., September 28, 1967.

CPCU Educational Institute, Hartford, October 12, 1967.

CLU Teachers Conference, Boston, October 26, 1967.

Worcester Life Underwriters Association, Worcester, January 12, 1968.

Western Mass. Chapter of CPCU, Springfield, January 26, 1968.

APPENDIX C

DEPARTMENT OF MANAGEMENT: Associate Professor George Simmons, Chairman

During the period covered by this report the Management Department has greatly strengthened its position and markedly advanced its potential for future growth. The most significant accomplishment this year has been in recruiting of faculty, an activity that is always critical, perhaps the most critical, for a growing school. We were, indeed, fortunate that three outstanding men accepted offers to join our department next fall: Van Court Hare, Jr., who comes from the Columbia Graduate School of Business as Visiting Professor of Management, Max S. Wortman, Jr., of the State University of Iowa, who will become Professor of Management, and M. William Frey, who joins us from Pennsylvania State as Associate Professor of Management.

Professors Hare and Wortman come to us with well established national reutations in, respectively, the fields of systems anslysis and industrial relations. Professor Frey is a younger man whose initial scholarly efforts in the area of behavioral science in management suggests that his developing potential will do much to advance the reputation of the School of Business.

With these three additions the department will have a full-time faculty of fourteen, plus one lecturer (Milton Brooke) whose principal work in the University is associated with the Labor Relations and Research Center, and whose years of experience in the field of labor relations should make him a valuable resource to the School and to the Department.

The current and immediately prospective faculty of the department covers adequately, and in some cases excellently, the subject matter areas of interest to management. We may, however, always look forward to strengthening particular fields of study as we enhance the overall intellectual character of the School. At this point in time I feel that the department could well afford to recruit additional highly qualified faculty in computer applications, quantitative production management, behavioral research, organization theory, and business policy. The last deserves, I feel, particular attention in that we should make a positive attempt to relate, in a meaningful and closely reasoned manner, research in the various functions of administration to the total management problems of the organization. This assumes even greater importance now that the managerial point of view is becoming a critical factor in the success and effectiveness of organi-

zations with objectives differing from those of private business firms.

Scholarly and Professional Activities

In the year just completed, members of the Management Faculty have participated in a variety of scholarly and professional activities which, combined, did much to enhance the reputation of our department as an academic institution, and to make the department and the School a more desirable place for prospective faculty to locate.

Publications

Professor Young completed a monograph, Manpower Training: Some Cost Dimensions which was published by the University Labor Relations and Research Center. His article "Organization as a Total System," was published in the Spring 1968 issue of California Management Review and two of his previous articles, "Designing the Management System," and "Designing the Behavioral System," were reprinted in anthologies published during the year. Professor Carlisle's study of U.S. corporate policy in Canadian subsidiaries, Cultures in Collision, was published by the Bureau of Industrial Relations at the University of Michigan, and his further work in the field was reported in "Cultural Differences and Supervisory Styles," published in the January 1968 issue of Industrial Relations Quarterly Review. Professor Michael's article "Financial versus Management Auditing," was published in the February-March 1968 Massachusetts CPA Review.

Papers presented. In presentations before professional meetings, the management faculty were quite active during this past year, probably far more so than anytime in the past. Professors Young and Chen presented two joint papers: "Cost Benefit Analysis for Social Welfare Programs" at the New York meeting of the Operations Research Society of America, and "Systems Analysis and Cost Effectiveness - A Rehabilitation Example" at the Chicago meeting of ORSA. Professor Chen also delivered a paper on "A Bilateral Optimal Lot Model" at the Joint ORSA - Institute of Management Sciences May meeting in San Francisco. Professor O'Donnell presented a paper, "Some Guidelines for Unifying the Management Sciences" at the College of Management Philosophy Session (of which he was Chairman) at the International Meeting of the Institute for Management Schiences in Mexico City. Professor Simmons presented papers on "Coordinating Efforts of the Public and Private Sectors in

Economic Development" at the Williams College Conference on Venezuelan Economic Development, "Problems in Business School Technical Assistance" at the Conference on Business Schools and World Affairs, Tulane University, and "Organizational Problems of Multinational Marketing" at the winter meetings of the American Marketing Association.

In addition to formal presentations of papers, Professors Chen, Michael, Carlisle, Young, and O'Donnell delivered talks to various academic, professional, and business groups, both within the Commonwealth and in other states.

I am also pleased to report that Professor Young has been elected Vice-President of the Eastern Academy of Management. That group will hold its 1970 meeting in Amherst.

Activities within the University

Faculty of the Management Department have taken a generous share of committee work both within the School and the University. Partly because of the peculiar relevance of the subject matter of management to other areas of study, many of our faculty have engaged in active consultation with other departments of the University, exploring the ways in which training in administrative practices might be instituted into other programs, as well as ways that concept and viewpoints developed in other departments might influence the development of our own curricula. One continuing effort in this direction is, of course, the Systems Research Group, which has been directed this year by Professor Tonnesen. The Systems Group brings together faculty from various parts of the University interested in studying the application of systems procedures and techniques to a wide range of problems. We look forward to a continuation and expansion of this group's work in the near future.

Of particular note in this regard is the work currently being done by Professor Tonnesen in connection with the Systems Task Force in the School of Education. The education faculty, stimulated by the new administration in that School, is undertaking a series of ambitious projects seeking to reorganize the structure of the teacher training process. We are pleased that Professor Tonnesen is an active participant in this process, and that he is maintaining excellent liaison between two schools with many areas of overlapping interests. In a similar line of activity, Professor O'Donnell has been active as an educational

consultant to the Polytechnic Institute of Brooklyn in the formulation of their five year plan for the development of a Graduate Department of Industrial Management.

A Look to the Future

With the School of Business and the Department of Management, now attaining a quite respectable size, and an inevitable diversity of interests, it is now most important that we examine some considerations that will affect the development of the Department.

First, I think it is now time to give serious attention to prospects for improving and expanding the range of opportunities available to our faculty. The environment as it now stands within the School supports and encourages research, and innovation in curriculum and teaching. Although those are the principal instruments through which a department of the University develops its stature, acceptance of their importance should not restrain the availability of other options. I have in mind as desirable opportunities consulting, participation in management development, service to the School, University, governments, and private businesses, and, possibily, periods of internship in outside organizations; there are, no doubt, other reasonable activities that deserve similar encouragement.

Some of these alternative opportunities should not only be made available, but participation in them should be made attractive. This would obviously require some rethinking, though not by any means radical reformulation, of our standards for evaluating professional competence and development. We would, I believe, find strength through a greater diversity. This diversity will emerge, however, only as we explicity recognize its merit.

Second, I think we should carefully cultivate a strong base of "logistical" support for the faculty in its varied interests. This, I realize, is not easy, nor is it always probable, in a University setting. Nonetheless, I consider it critically important that we attempt to provide a setting in which our faculty can function as effectively as possible. Examples of tangible aspects of such an environment are well known: adequate secretarial support, travel funds, student assistance, and equipment and supplies. Perhaps somewhat more subtle is the maintenance of an atmosphere in which accomplishment is not only encouraged and expected, but also receives the support that makes it possible.

APPENDIX D

DEPARTMENT OF MARKETING: Associate Professor Jack S. Wolf, Chairman

Departmental Achievements

This past year was spent reviewing the substantial revision of the undergraduate curriculum in marketing introduced in the Spring of 1967. The introduction of simulation, new course materials in the quantitative area, and the near-completion of the Behavioral Science Laboratory with its attendant utilization even during the Spring Semester, 1968, are examples of curricular achievements. A review of topical overlaps may possibly suggest the apparent need to eliminate two and possibly three course offerings at the undergraduate level in the near future.

The curricular revision plus successful recruiting probably account for the substantial increase in the number of Junior-Senior marketing majors; from approximately 80 in the Fall of 1965 to a current count of 152.

With respect to graduate level coursework, two new courses were introduced. These are International Marketing Management and Seminar in Marketing Problems and Issues. These additions have provided Master's students with an opportunity to select additional elective options in the field of marketing.

A desirable form of inter-disciplinary cooperation between the Economics Department and the Marketing Department was formalized as of Fall 1968. At this time Professor Marshall Howard will offer the new Seminar in Marketing Problems and Issues course by presenting materials emphasizing the legal aspects of marketing.

In addition, recruiting activities this past year were fruitful. As of September 1968 the Department will acquire the services of Professors Kent Monroe and Donald Frederick. As of this writing Monroe will undoubtedly arrive on campus from the University of Illinois with his terminal degree completed. Frederick leaves the Acting Chairmanship of Marketing at the University of Illinois and is terminally qualified. Both men not only add substantially to the quantitative needs in the department, but are flexible in that they will also add to the School's resources in the statistics area and the quantitative aspects of the Ph.D. program.

Publications:

Books:

Mass Merchandising: Revolution and Evolution, Robert Drew-Bear, Fairchild Publications, Fall, 1968

Articles and Monographs:

M. Venkatesan

"Credit as a Communication Process and the Consumers' Ideas about Credit," (with Robert Hancock) in Marketing for Tomorrow, Today, (editors: M.S. Moyer & R.E. Vosburgh) Proceedings of the American Marketing Association, 1967.

"Personality and Persuasibility in Consumer Decision Making," Journal of Advertising Research, March, 1968, pp. 39-45 (Vol. 8#1)

"Divided Attention and Television Commercials: An Experimental Study," (with Gordon Haaland), Journal of Marketing Research, Vol. 2, May 1968, pp. 3-5.

"Resistance to Persuasive Communications: An Examination of the Distraction Hypothesis," (With Gordon Haaland), Journal of Personality and Social Psychology, June, 1968.

G. Albaum

"The Cooperative-Based Marketing System in Tanganyika," Journal of Marketing, October, 1967

"The Role of State Governments in International Business," Arizona Review, March 1968

State Government Promotion of International Business, Tucson, Arizona: University of Arizona, Division of Economic & Business Research, March, 1968

Research Grants and Proposals:

Research Council, University of Massachusetts -- two
American Association of Advertising Agencies (proposal) --one
Research Council, University of Massachusetts (proposal) -- one
Summer Growth Grant, University of Massachusetts -- one
SBA Summer Research -- three

Faculty Activities in Professional Associations:

Session Chairmen, American Marketing Association Meetings, Denver, Toronto, and Philadelphia (three)

Papers presented, American Marketing Association, Toronto (two)

Abstracts staff, Journal of Marketing

Evolving Educational Objectives of the Department:

The Marketing program holds several objectives in common:

1. Development of understanding of the external forces affecting an organization...the legal, political, economic, and socio-cultural environment of the firm, including business relations with government.

2. Decision making experience...familiarity with formal decision making techniques of both a qualitative and quantitative nature; experience in both simulated and actual business problems.

3. Development of organizational ability...exposure to the basic systems of organization and management and to current research findings in the behavioral sciences; and, experience in simulated and/or actual problems requiring organizational decisions.

4. Development of individual communication skills...through the requirement of written and oral presentation in class work.

5. Development of knowledge in depth in marketing...through successful completion of prescribed course work at undergraduate and graduate levels. Students should be encouraged to engage in research projects of their own and, where practicable, should participate in faculty research.

The essential element of the learning process is the development of the ability of the student to identify problems, to recognize relevant variables, and to structure these variables into a meaningful set of qualitative and/or quantitative relationships for decision making. The following are applicable as the student takes more advanced coursework.

(a) Student participation in and responsibility for classroom discussion increases

(b) Course content becomes less descriptive and more analytical

(c) The use of formal models, either qualitative or quantitative, for the purpose of analysis increases

ANNUAL REPORT

1967-68

SCHOOL OF EDUCATION

UNIVERSITY OF MASSACHUSETTS

Dwight W. Allen, Dean

ANNUAL REPORT

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C O N T E N T S

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Research Grants and Projects B

Professional Activities C

The Commonwealth of Massachusetts
University of Massachusetts
Amherst 01003

OOL OF EDUCATION

July 25, 1968

President John W. Lederle
Whitmore Administration Building
University of Massachusetts
Amherst, Massachusetts 01002

Dear President Lederle:

I am pleased to submit the attached Annual Report for the School of Education. In addition to the events and accomplishments of the 1967-68 year, this report outlines the changes that we anticipate in the School in the year to come.

Faculty and students will be active participants in the planning process, which in itself will be a unique learning experience. I am looking forward to reporting to you in the Annual Report next year on substantial accomplishments in the launching of comprehensive new programs.

Sincerely,

Dwight W. Allen
Dean

DWA/aw

ANNUAL REPORT

1967-68

SCHOOL OF EDUCATION

UNIVERSITY OF MASSACHUSETTS

Dwight W. Allen, Dean

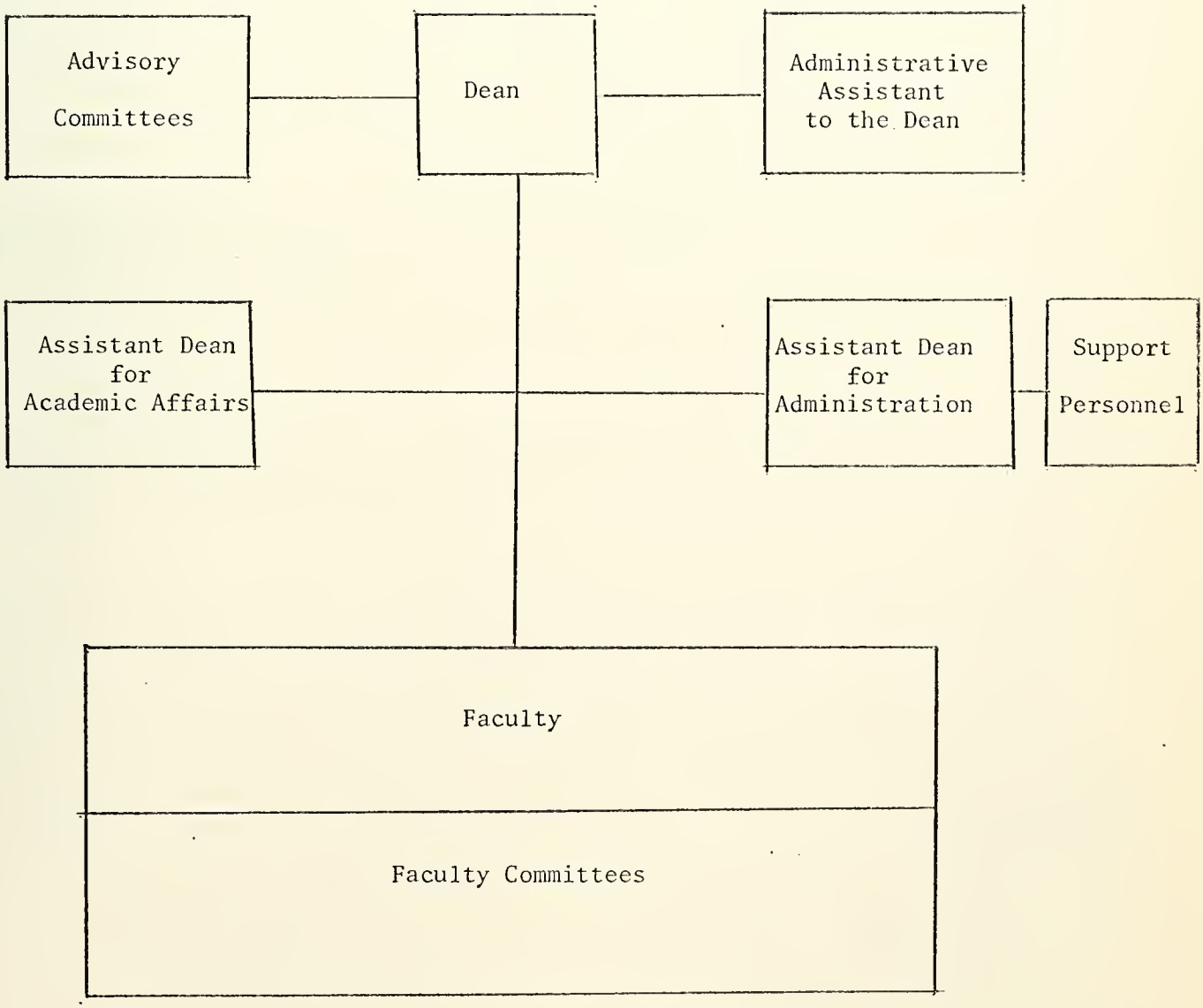
Appropriations--Operational Budget

		Actual 1965-66	Actual 1966-67	Allotted 1967-68
03	Services, Non-Employee	$34,521	$36,545	$50,050
10	Travel	8,267	6,302	9,000
11	Advertising & Printing	596	120	
12	Maintenance	1,027	1,922	1,700
13	Special Supplies	9,820	9,809	12,000
14	Office Expense	2,930	3,786	3,000
14.1	Telephone	3,345	3,918	5,000
15	Equipment	2,044	866	1,000
16	Rentals	96	73	100
	TOTAL	$62,646	$63,341	$81,850

Personnel	September 1965	September 1966	September 1967
Faculty and Administration			
Dean	1	1	1
Assistant Dean	1	1	
Professor	3	3	3
Associate Professor	8	9	11
Assistant Professor	14	13	10
Lecturer	1	3	1
Instructor	5	5	8
Position Vacancy	2	3	4
Total	35	38	38

Other Personnel	September 1965	September 1966	September 1967
Electronic Technicians	3	2	2
Technical Assistant	1	1	1
Principal Clerk	1	1	1
Senior Clerk-Stenographer	1	1	1
Junior Clerk-Stenographer	7	8	8
Total	13	13	13

Organizational Chart (1968)



Students or Clientele Served

	September 1965	September 1966	September 1967
Undergraduate Majors	695	837	919
Enrollment (1st semester)			
Undergraduate	1062	1286	2005
Graduate	776	791	761
Total	1838	2077	2766

Full-time Equivalent (F.T.E.) Enrollment

	1965-66	1966-67	1967-68
Undergraduate	N/A	N/A	479.3*
Graduate	N/A	N/A	358.2
Total			837.5*

Faculty Publications, Research Grants and Projects and Other Professional Activities

These activities are included as Appendices A, B, and C of this annual report.

Major Accomplishments

The 1967-68 year was a period of transition for the School of Education following the retirement of Dean Albert W. Purvis after thirty-one years of service to the University. Professor Ovid Parody served as acting dean until the arrival of Dean Dwight W. Allen at mid-year.

The School engaged in extensive recruitment activities during the spring to fill vacancies and new positions. The faculty joining the School of Education provide the School with a new potential along a number of dimensions. They strengthen the School's competence in the behavioral science disciplines that form a basis for the discipline of education; provide a variety of perspectives from which to view the study of education; add to various competencies in Education areas such as urban issues, higher education, and international education; bring experience in dealing with innovative patterns in educational organization, school curriculums and staff preparation. The research competence in the faculty has been enhanced by appointments in educational psychology and statistics. Some faculty come qualified as Doctor of Education; others have different, unique, yet equally valuable qualifications in terms of the typical school of education composition.

In February the U.S. Office of Education selected the School of Education as one of the nine institutions in the country to develop specifications for a "model"

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*Includes 3-unit credit equivalent for non-credit observation courses.

elementary teacher education program. Work on this $100,000 project began in March, and the development of elementary teacher education specifications will dovetail with the planning process of the School of Education during the 1968-69 academic year.

Major changes in curriculum in the School are anticipated for the 1969-70 academic year. An intensive faculty and graduate student planning effort will be undertaken and preliminary plans are underway.

In addition to the Model Elementary Teacher Education Project, the faculty of the School has prepared an extensive proposal for sponsored research beginning in 1968-69 under the Education Professions Development Act of 1967. If funded, this proposal will permit a number of specific projects to be started in areas of education of the disadvantaged, urban education, accelerated teacher preparation, and cooperative exchanges with disadvantaged institutions of higher education--particularly in the Appalachian region and the South, as well as extensive cooperation with the school systems of Amherst, Springfield, and Worcester, Massachusetts in the development of relevant preservice and inservice teacher training programs.

Also this spring, preliminary outlines were presented to the University Master Planning Committee and the University Planning Office for construction of a new School of Education facility, a Learning Resources Center and an Experimental School. The existing facilities of the School of Education are badly over-crowded for faculty and staff and the design of instructional space is not suitable for new instructional modes. Projected increases in students make this new space essential.

Preparation of the 1969-70 budget request this spring reflects a number of important concerns of the School of Education including:

-- Correction of long standing deficiencies in the present program

-- Development of an advanced graduate program involving research and specialized personnel

-- Development of a new role for the laboratory school

-- Establishment of a microteaching clinic

-- New major emphasis in urban education, higher education, and international education

-- Experimentation in new model teacher training programs

-- Increasing national professional involvement of school faculty

The acquisition of a research oriented faculty in a professional school requires a high level of technical, administrative and "housekeeping" support. The equipment necessary to support the program of research in an applied area which depends heavily on technology will continue to grow and present planning reflects only a very tentative probe in that direction.

Preliminary plans have also been developed for changes in the role for the Mark's Meadow Laboratory School from passive observation and demonstration to active

experimentation. The laboratory school faculty will be called upon to assume additional and varied responsibilities in a differentiated staff and will be expected to participate actively in the programs of the School of Education.

The responsibility for inservice education in the development of new professional models--which is of concern to the profession in general--means that experimental training programs have to be mounted where staffing requirements will be greater over a two to three year phasing-in period as programs are developed and tested. A shift in the nature of the Teacher Education Program, if it is to be operated to compete nationally at the forefront of teacher education, will require a different order and magnitude of expenditure, and it can be anticipated that over the next several years there will be sharp increases in budget needs for this program per candidate (as well as increases due to a general rise in the number of candidates being trained, unless the University wishes to place an arbitrary ceiling on the number of persons prepared at the elementary and/or secondary level.)

The School supervised over 500 student teachers in 1968 and the estimate is that about 700 will be serviced next year. Partially reflecting the increase in student teachers but, more importantly, reflecting more productive methods of supervision, the School will begin extensive use of advanced graduate students and video tape equipment. An adjunct of these changes may be more extensive assistance to local school districts for inservice teacher training programs so essential to the updating of classroom personnel.

Special Projects and Programs

In addition to the model Elementary Teacher Education Project and the other research projects funded by outside agencies, the School of Education operates the Cooperative School Service Center which provides advice and assistance in a number of subject areas to school districts primarily in the Commonwealth but also in other New England states. A professional School of Education must maintain close ties with local educational agencies--for these agencies are the recipients of the graduates of our programs and are the focus for improvements in the education of children. Schools of education must become much less the "ivory towers" and much more the change agents for new methods, organizations, and for the installation of new technologies in the field of education. The criticisms of public education are legion; if improvements are to be made they must be initiated by schools of education, competently staffed and acting in close relationship with other agencies and institutions dealing with the preparation of children for the variety of roles in our complex society.

The Cooperative School Service Center can become the locus of significant advancement in local school administration and instruction through central data processing services, management consultation, and curriculum development assistance. This is clearly an organization which can have a significant service impact on the citizens of this state and neighboring areas.

A Northeast Regional Media Center for the Deaf has been established in the School of Education under contract with the United States Office of Education. Dr. Raymond Wyman, Professor of Education and Director of the Audiovisual Center, is the director of the project.

The Center is designed to provide several types of media service particularly to the schools but also to other groups that work with deaf people of all ages in

the northeast quarter of the United States. The project activities are integrated with the University audiovisual activities for mutual advantage.

Demonstrations of audiovisual equipment and materials for education of the deaf have been conducted at many schools. New classrooms for using media have been designed for schools in Delaware and Connecticut. Media centers have been designed or expanded at several schools. Experiments with new ways of using equipment have been conducted. An elementary language arts program for the overhead projector is being constructed, and six hundred copies of two hundred master slides will be distributed to schools throughout the United States. Media institutes for teachers were conducted during the summers of 1966 and 1967; and an advanced institute for thirty supervisors and directors of media programs at schools for the deaf will be conducted during the summer of 1968. Media support is planned for the institutions that prepare teachers of the deaf.

School faculty and staff serve in a variety of roles in advising the State Department of Education and the Board of Higher Education, the State Review of Teacher Certification procedures, the development of the State Plan for Implementation of the Education Professions Development Act of 1967 and studies of the preparation of Community College staff.

Planning for the Future

The current catalog of the School of Education will be discontinued as of September 1, 1969 and whatever appears, or reappears, in the catalog for the 1969-70 year will be the result of an intensive school-wide planning effort which has already begun and which will be completed by mid-spring 1969.

As the School of Education undertakes comprehensive replanning of its programs we hope to examine the structure of teacher education itself and make teacher education a focal point for research in the School of Education. Typically schools of education complain that the role of teacher education detracts from the research potential of the faculty. We hope to use the opportunity to prepare a large number of undergraduate and graduate teachers as an opportunity to gain insights into the process of teacher education and actually enhance a research program in teacher education.

We will be working to discover new locations for teacher practice and we have made comprehensive arrangements with Springfield and Worcester to extend our clinical experiences into the inner-city area, gaining a wider variety of experiences for our teachers in preparation. Building on the concept of micro-teaching as a new approach to practice in teaching, we will add the strength training clinic which Professor Weinstein has brought with him from Teachers' College, Columbia University, and look at alternatives in extensive tutoring programs with underpriviledged and disadvantaged students both within the University undergraduate community and outside the University.

It is our intention to replace many of the courses with performance criteria in order to avoid making the number of hours a person studies a particular subject the criterion for credit rather than the level of performance. We hope to be much more flexible in our requirements and give students a much larger say in planning their programs and have a much wider range of alternatives available at all levels, graduate and undergraduate. We plan to extend the graduate program into the day rather than restricting it to late afternoon and evening scheduling. However, at the same time it is likely that we will expand

the range of offerings for teachers in the nearby communities that the University serves as a part of its inservice obligation. The School of Education hopes to find ways to expand its service to the public schools of the Commonwealth at all levels and in all areas of involvement.

A special doctoral program has been established unique to the year of planning wherein participation as members of planning committees will serve as the core requirement for the doctorate. Special doctoral candidates will be placed on a one-to-one ratio with teaching faculty in close association for between 10 and 15 hours a week, which the planning faculty will be using systematically for planning purposes. In a typical doctoral program a doctoral candidate gets to know one or two faculty well; we hope that in this program candidates will have an opportunity to have intimate association with a large majority of the faculty of the total school as they serve on a variety of planning committees.

The current budget problems in the University are of course reflected in the development of our School of Education program. It comes at a particularly inopportune moment as we are engaging in systematic planning and trying to expand our program offerings. Particularly acute is the lack of planning resources and support staff for the faculty--especially technical and clerical staff. It must be noted that the faculty-student ratio is above that recommended by the University and our calculation of full-time equivalent students would indicate a shortage of some seven faculty for the 1968-69 year in spite of dramatic expension of faculty for September 1968.

Among the critical needs for the School are the construction of a new School of Education facility to replace the current building and an experimental school. Space assignment for the School of Education including the experimental school, must reflect the rapid expansion of laboratory requirements and dramatic expansion of technological innovations for which little or no precedent currently exists. Laboratory facilities over the next few years will become quite analogous to those of the natural sciences and engineering.

Technological change will require space allowances for television and motion picture production and demonstration, computer assisted instruction (CAI) facilities and for developmental facilities for the generation of instructional aids of advanced design including materials for demonstration, computation, simulation of learning and teaching, and facilities for dissemination of instructional content. If the School is to make a meaningful contribution to the improvement of education in the Commonwealth and in the nation, its capacity to experiment and develop new approaches and devices for education must be provided through adequate space for these activities, and the proposal of the School for new major facilities reflects this assumption.

Another very important construction need exists: The present audiovisual center needs to be expanded to form a Learning Resources Center in order to provide the University instructional staff with all forms of newer media and guidance for their wide and good use so that student learning will be facilitated. The scope of this program is University-wide.

Much has been learned about facilitating learning in recent years. There is no doubt that newer media have an important place in the teaching-learning activities on our campus. So far, we have only made a few of these available on a rather haphazard basis. It would be the purpose of the new Learning Resources Center to

provide both the technical material and professional help necessary to permit and encourage the teaching staff to use newer media effectively.

The morale of the faculty is high in anticipation of the planning process. There is a constructive place for all faculty in this process and every effort must be made to design the School's program to provide maximum opportunities for continuing professional development.

In short, this has been a year of transition and change, but the change has been much more visible at the faculty level than in student programs. The effect on the students will not be felt in full force until a year from September when the new and revised programs of the School will be implemented. However, there is a feeling of excitement and of change in the air--a feeling of excitment which hopefully will contribute to the constructive involvement of the faculty and students in the planning year ahead.

Appendix A

FACULTY PUBLICATIONS

Allen, D.W., "How You Can Individualize Instruction--Right Now," Nation's Schools, April, 1968.

Allen, D.W. and Clark, R.A., "A Rationale for Micro-Teaching," The High School Journal, November, 1967.

Allen, D.W., "A Differentiated Staff: Putting Teacher Talent to Work," Occasional Papers, National Commission on Teacher Education and Professional Standards, NEA, December, 1967.

Allen, D.W. and Krasno, R.M., "New Perspectives in Teacher Preparation," The National Elementary Principal, Vol. XLVII, No. 6, pp. 36-42, May, 1968.

Allen, D.W., "The Education of Youth: Promises," ASCD Yearbook, Chapter X, 1968.

Allen, D.W., "Needed: A New Professionalism in Education," AACTE Bulletin.

Allen, D.W., (general co-editor with Robert Madgic), Great Issues Series, The Scholastic
THE PIONEER vs. THE WILDERNESS: Did the Frontier Create the American?
REBELS vs. ROYALISTS: What Was the American Cause?
NAPOLEON BONAPARTE: What Are the Consequences of Power?
WOODROW WILSON AND THE LEAGUE OF NATIONS: Why Was a Just Cause Defeated?
APPEASEMENT IN THE 1930's: Why Did Diplomacy Fail?
MacARTHUR vs. TRUMAN: How Should Communist Aggression Be Met?
YOUTH AND PARENTS: Is the American Family Too Permissive?
THE SUPREME COURT: Guardian or Lawmaker?
FREEDOM AND CONTROL: Should a Democracy Tolerate Censorship?
AUTOMATION AND ITS CHALLENGE: Can Man Control the Machine?
THE WETS AND THE DRYS: Drinking-What Are the Risks?
THE PRESIDENCY: Does the Executive Have Too Much Power?
NOMINATING CONVENTIONS AND THE ELECTORAL COLLEGE: Is It Time for Change?

Anderson, G.E., Jr., "Study Hall Assignment Logic," Journal of the Association for Educational Data Systems, September, 1967.

Anderson, G.E., Jr., regular column in The Nation's Schools.

Anthony, A.S., "Pedagogical Limitations of the Source Materials Approach to the Study of History," The Social Studies, 1968.

Anthony, A.S., "History is Not Passive," The Pedagogical Review, 1967.

Budde, R., "Jump on the Nongraded Bandwagon? Stop! Think!," The National Elementary Principal, November, 1967.

Budde, R., "New Intelligence--New Man--New Education," Curriculum Bulletin, June, 1968.

Chenault, J., "Organizational Identity," Counselor Education and Supervision, pp. 42-47, 1967.

Fredrickson, R.H. and Nelson, R., "School Counselor Problems: Colorado Versus Massachusetts," Personnel and Guidance Journal, December, 1967.

Fredrickson, R.H. and Johnson, R., "Effect of Financial Remuneration and Case Description on Counselor Performance," Journal of Counseling Psychology, March, 1968.

Fredrickson, R.H., Zimmer, J.M., Pippert, R.R., "The Amherst Ungraded Program: A Preliminary Evaluative Report," prepared for Ronald J. Fitzgerald, Superintendent, Amherst-Pelham Regional School District, December, 1967.

Goff, R.M. and Sleeman, P.J., "The Instructional Materials Center: Dialogue or Discord," Audiovisual Communication Review, Vol XV, No. 2, pp. 160-168, Summer 1967.

Griffiths, W.E., "Libel and Slander: Liability of School Committee Members for Defamation,: MASC Journal, February, 1968.

Jones, R.C., "The Measurement of Superior Teaching," Faculty Research Grant, University of Massachusetts, 1968.

Jones, R.C., "Using Videotapes in Directed Observation,: Multi-State Teacher Education Project on the Use of Television in Teacher Education, Baltimore, Maryland, 1967.

Konicek, R.D., Jacobson, W., and Lanby, C., Thinking Ahead in Science, 6 Vols., American Book Company, 1965-1968.

Kornegay, W., "'The Open Market:' A New Model for Our Schools?" Phi Delta Kappa, Spring, 1968.

Krasno, R.M. (with D.W. Allen), "New Perspectives in Teacher Preparation," The National Elementary Principal, Vol. XLVII, No. 6, pp. 36-42, May, 1968.

Lunney, G.H., "National Assessment: What Is It Trying to Accomplish?", Trend, 1967.

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Appendix B

RESEARCH GRANTS AND PROJECTS

U.S. Office of Education Contract: Program for Elementary Teacher Education at the University of Massachusetts, (Dwight W. Allen).

U.S. Office of Education Contract: Media Center for the Deaf, Northeastern Region, (Raymond Wyman).

U.S. Office of Education Contract: National Defense Education Act Summer Institute in English, (Richard O. Ulin).

Upward Bound Project, (William Madaus).

Agency for International Development: Operation of Tororo Girls School, Uganda, East Africa, (Elwyn Doubleday).

Distributive Teacher Education Project, (William C. Wolf, Jr.).

U.S. Office of Education Project, C.F. Kettering Foundation, Diffusion and Utilization Strategies, (William C. Wolf, Jr.).

Applied Research Training Program Project, (William C. Wolf, Jr., Emma M. Cappelluzzo, et al.).

Amherst Public School Evaluation Project, (Jules M. Zimmer, Ronald H. Fredrickson and Lawrence Wightman).

Dexter Foundation Research Project, After-Care Childrens' study Home, (Alvin E. Winder).

Comprehensive Random Achievement Monitoring Project, Kettering Foundation, (Dwight W. Allen).

Microteaching and Counseling Project, Kettering Foundation, (Allen E. Ivey).

Appendix C

PROFESSIONAL ACTIVITIES

Dwight W. Allen - Chairman, Planning Coordination Committee and Chief Consultant, Education Professions Development Act, U.S.O.E.; Member, Massachusetts Advisory Council on Education; Chief Consultant, Differentiated Teaching Staff Pilot Project, Temple City Schools, California; Member, Board of Directors, New England Educational Data Systems; Principal Investigator, Model Elementary Teacher Education Project, University of Massachusetts; Keynote speaker, various educational conferences.

G. Ernest Anderson, Jr. - President, Association for Educational Data Systems

Ray Budde - Editor of Trend, Publication of the Cooperative School Service Center

Philip L. Edgecomb - Special Editor Agricultural Education

Ronald H. Fredrickson - Newsletter Editor, Program Planner, National Vocational Guidance Association; Principal Investigator, "Assistance given by high school counselors on college choice; Research consultant, Kettering Foundation Grant on diffusion vehicles for educational innovation; and Project consultant for Ware, Massachusetts Public Schools.

Robert C. Jones - Faculty Research Grant "The Measurement of Superior Teaching"

Richard D. Konicek - Consultant on Elementary Science, Amherst Public Schools

Helen Frances O'Leary - Originated small group instruction spelling program now in operation in grades 4, 5 and 6 in all Amherst Schools.

Richard O. Ulin - Director, NDEA Institutes for advanced study in English; Director, Prospective Teachers of the Disadvantaged; U.S.O.E. Consultant, Upward Bound Project, U.S. Office of Economic Opportunity; and Consultant, Choice, Oxford University Press

Alvin E. Winder - Chief consultant, Upward Bound Program; Director, Day Care Program Springfield Childrens' Study Home; Coordinator, Group counseling program Springfield Neighborhood Youth Corps; Consultant, Vista Office of Projects and Field Support; and Advisor, Community Mental Health and Retardation Board of Greater Franklin-Hampshire Area

William C. Wolf, Jr. - Consultant, Bureau of Research U.S.O.E.; Member New England Team, Center for the Study of Instruction, NEA; and I/D/E/A Staffmember, Charles F. Kettering Foundation

Raymond Wyman - Director, Audio-Visual Center, University of Massachusetts; Visiting Lecturer, New Mexico State University, Springfield, College, Vermont Workshops; Radio Engineer WHYN and WHMP; Consultant, New Mexico State University, San Jose State College, Michigan State University, and National Education Association

Jules M. Zimmer - Consultant, Holyoke High School, Uganda Teacher's Orientation, and Crocker Farms School; Speaker: Massachusetts Teachers Association, Smith College, A.P.G.A. Convention in Dallas

ANNUAL REPORT

OF THE

SCHOOL OF ENGINEERING

FY 1967-68

UNIVERSITY OF MASSACHUSETTS

AMHERST, MASSACHUSETTS

June 1968

Annual Report

School of Engineering

1967-68

I. Introduction

The statistical data requested has been placed in appendices as follows:

Appendix I - Appropriation Data

Appendix II - Personnel Data and Organization Chart

Appendix III - Students Served

Appendix IV - Professional Activities of the Faculty

It seems appropriate to continue the format of last year's report in which accomplishments, faculty recognition, plans, and finally, problems facing the School were discussed. Copies of departmental reports are included as Appendix V.

II. Accomplishments

1. Undergraduate Curricula Studies

Major changes in each of the six undergraduate degree programs were initiated during the past academic year as a result of the excellent work done by the School of Engineering Curriculum Committee, chaired by Associate Dean Lindsey. It was necessary for the School to formulate a framework and basic foundation upon which each department could develop its own curriculum revision. The faculty of the School adopted a School-wide limit of 128 credit hours and substantial changes in the freshman year. The principal changes are: (1) to phase out the special mathematics sequence for engineers and adopt the regular sequence taken by mathematics majors, (2) to provide an optional physics sequence which the engineering student can adopt without penalty, and (3) to no longer require Economics, giving the student additional flexibility in his choice of social science electives.

The Curriculum Committee of the School also considered the desirability of including Biology in the curriculum, and concluded that until engineering education adopts a five-year professional degree nationally, we simply would not have time to include Biology as a required course. The existing Engineering Science Program was examined and it was recommended that each department give careful consideration to the development of an honors program in each discipline.

Substantial changes were made in the basic engineering courses given in the freshman year. Each department provides approximately one-third of a man during one semester to teach with the core staff of the basic engineering group. In the first course (103) the trend toward

more emphasis on creative disign and less on drafting skill continued. Professor F. G. Umholtz initiated changes in this direction in 1966-67. Dr. John R. Dixon, with support from the Provost's Course Development Fund, continued this work in the Spring Semester, 1968. Unique techniques using films and exercises developed by Massachusetts Institute of Technology were used to develop sketching and orthographic projection skills. The major thrust, however, was on the design process itself, well-documented by case studies. Special lectures by Professor Geoffry Boothroyd and Professor F. H. Edwards were presented to focus on manufacturing methods and switching circuits. The new direction in Engineering 103 has found keen reception on the part of the students.

The second course (104) involves work which is entirely digital computation and numerical methods of problem solution. Associate Dean Lindsey introduced some of the material of the Engineering Concepts Curriculum Project, "The Man Made World", in a section he taught last semester. The material of the "Man Made World" found a receptive audience among our students in that they begin to learn how engineering relates to the problems of society and how the engineer seeks to solve some of these problems. Excellent cooperation between our faculty and Mr. Charles Camp of the Amherst Regional High School has resulted in laboratory equipment for the program being pooled when necessary to satisfy the needs of the high school and our own.

Because many of the engineering faculty members feel they can contribute significantly to the general education program of the University, the School has proposed to offer two new courses aimed at helping the well-educated man of the second half of the 20th century to understand the concepts of technology, what it is, and how it shapes society.

The citizen's most direct contact with science today (and in the past) is through technology. The rapid and important social and economic changes that are called the Industrial Revolution were neither scientific nor humanistic. They were technological. One wonders whether the curricula of colleges and universities were adequately concerned with the nature of these changes, so that educated young people could properly take them into account, thus opening the way for the control and shaping of the changes for the benefit of people. We are again in a period of rapid technological change. This time machines are taking over not only physical tasks but mental tasks as well. This time, also, these changes rapidly are altering our environment, and they hold forth the possibility literally of making it uninhabitable. For these and other reasons it is hoped that liberal education today will provide students with an opportunity to encounter and to consider the new changes and their effects on the nature and, indeed, the quality of man's existence.

There are colleges and universities where the engineering faculty has been offering elective courses for the student not majoring in science or engineering. These have taken various forms but usually the theme is to present the impact of technology on present or past societies. The University of California at Berkeley is one example. Here, one of the underlying

causes for unrest is felt to be that many students could not perceive any relevance in the courses to the problems of today's technologically-affected society. Recently Berkeley's College of Engineering established three courses under the theme of Contemporary Technology and the acceptance of these by students indicates it may be a way of bringing relevance into the undergraduate liberal education.

The Student Chapter of the American Society of Civil Engineers was again singled out for a Certificate of Commendation, the seventh in eight years. This student group, ably advised by Professor William Boyer, is equaled by only four of the roughly 160 student chapters in the United States and Canada.

A student-faculty-administration council was formed in the Department of Mechanical and Aerospace Engineering consisting of eight students, two faculty members, and the Department Head. The purpose of the council is to discuss matters of mutual interest and concern. Dr. Dixon believes that the council has accomplished its goal and he plans to continue using the council as a way of fostering harmonious faculty, student and administrative interaction.

There has been a concerted attempt in all departments to keep the communication channels between the faculty and students in the School wide open. In addition, we ran our first "Quiz the Dean" night. A working organization composed of the Presidents of the various student chapters of professional societies and honoraries, with Dean Joseph Marcus as advisor, has developed a series of programs of interest to students and faculty members alike.

As a bridge between the academic engineering program and industry's real world approach to engineering, Dr. Howard Segool, Assistant Dean Marcus and Professor Robert Patterson have continued to shepherd a pilot cooperative work-study program into its fifth semester. The option has now been extended to majors in Mechanical, Aerospace, Civil, and Industrial Engineering. Job placements now exist intrastate, in the Midwest, and on both the east and west coasts. The program promises to ultimately embrace upwards of 20 per cent of the School's enrollment and affords a selective but necessary option for a significant section of our undergraduate student body with distinct potential at the graduate level.

The enthusiasm of Assistant Dean Marcus for the program of the International Association for the Exchange of Students for Technical Experience (IAESTE) resulted in the formation of a student group this past year whose goal it was to significantly increase the participation of the University in the program. IAESTE seeks to: (a)train advanced students of engineering, architecture and the sciences in the industrial techniques of other nations and (b) build a foundation for international understanding and good will among these potential leaders and the host companies and institutions.

Students and jobs exist in 41 countries on both sides of the iron curtain. The program is reciprocal in nature. Thus, the number of American students

placed in other countries is largely dependent on the number of offers available from American business and industry for the placement of foreign trainees. Last summer we were able to interest only one student in the program. We are indeed delighted to report that six students from the University will participate in the program during the coming summer. All six will be working and traveling in Western Europe.

2. Graduate Programs

The doctoral programs approved by the Trustees in the spring and summer are developing both quality and expanded enrollments. Excellent productive faculty members have been added and will be added next fall because of the attraction of working with students at all academic levels. The enrollment in the graduate programs of the School increased from 150 to 175 last fall. Ignoring the uncertainty of the new draft law, we have reason to believe a similar increase might take place next fall.

The most significant accomplishment to be reported in this section is the fact that two doctorates were awarded in Chemical Engineering and one in Civil Engineering during the past year. These of course represent the first doctorates produced by the School of Engineering and is an indication of the rapid growth of quality in the two departments concerned and predicts the growth of the other units in the School.

A new graduate program in Environmental Engineering has cleared all campus committees and should be taken to the Board of Trustees this summer for their approval. The Environmental Engineering program reports administratively to the Head of the Department of Civil Engineering but is in reality a multidisciplinary program involving Civil Engineering, Chemical Engineering, Industrial Engineering, Public Health, Agriculture, and the Water Resources Center.

Recognizing that one of the complex and serious problems facing the Nation today is the control of man's environment -- land, air and water, the need for environmental engineers broadly trained at both the doctoral and masters level is evident. It is indeed appropriate that the University of Massachusetts enter this field because of the many years of neglect New England suddenly finds many of its sewage treatment plants antiquated and overloaded and vast quantities of untreated waste waters discharged in its rivers, lakes and coastal waters. In addition, the recent great drought vividly illustrated the inadequacy of water supply systems in the region.

Society now expects modern, effective pollution abatement and control. Vast amounts of federal and state funds have been appropriated to solve these problems but progress is hampered by the lack of trained personnel in environmental engineering. The Environmental Engineering group at the University represents one of the major centers of competence in New England. Starting from three faculty members and a small number of students last year, the group now numbers at least ten faculty members and, hopefully, twenty five students next year. Given reasonable support by the University, this group can become one of our steeples of excellence in the next few years.

3. Research

The most significant accomplishment of the School regarding our research activities has been the dramatic increase in sponsored research. In 1965-66 we estimated our sponsored research at $100,000 which has grown to at least $700,000 for the current year. The remarkable aspect of this growth is that it has occurred during two years of holding the line in the federal agencies concerned with supporting University research programs.

A major fraction of our sponsored research comes from our Project THEMIS award of last year. The significance of the award was discussed in my report for 1966-67. The Office of Naval Research monitors our THEMIS contract and has been most complimentary of the progress under the direction of the Deep Sea Submersible Board. ONR recommended an increase in our annual effort of 5 per cent but unfortunately this recommendation was denied at higher levels. The fact that we will remain at $180,000 next year is significant however in that many schools have learned that their annual level of THEMIS research will be cut next year.

Rather exciting progress has been made by the faculty members carrying out research on deep-sea related projects. We are developing a national reputation in this field as evidenced by the number of invitations received to participate in national meetings.

The Department of Chemical Engineering and the Polymer Science and Engineering group has received at least 10 per cent of the entire ChE budget of the National Science Foundation. Substantial support has also been received by the Department of Mechanical and Aerospace Egnineering.

A cooperative research relationship between the Department of Electrical Engineering and the Cambridge NASA Electronics Research Center has been developed which should lead to very important and expanding interaction between the two groups. A $30,000 research contract has been awarded which provides for a great deal of local autonomy in deciding the research projects to be supported at the University. The arrangement promises to be an expanding one in terms of financial support and research facilities. An important side benefit already evident is the enhancement of faculty recruiting in Electrical Engineering as a result of the close ties to NASA.

The growth of the Environmental Engineering research and graduate training program has been supported to a great extent by federal agencies. Over $120,000 was awarded in 1967-68 to support the Environmental Engineering program compared to the $92,000 provided by the Commonwealth. We have assurances that three additional research grants will be awarded as soon as the freeze of HEW funds is lifted.

Last year the Interdisciplinary Research Laboratories initiated in the School of Engineering were discussed in great detail. After one year's experience of working with the Interdisciplinary Laboratories it has become apparent that some modification of the administrative structure of the Laboratories is necessary. It is unfortunate that funds were not available to support the Laboratories to the extent necessary to give the experiment a fair trial. The creation of the Laboratories included adequate administrative and technician assistance which we could not provide.

The faculty committees administering the Laboratories should be commended for their intense efforts to make the concept work. A proposal to develop laboratory facilities for the Fluid Mechanics group has been written and will be sent to the National Science Foundation for possible funding at $400,000. The facilities conceived by the faculty committee would give the University community interested in fluid flow problems an excellent but not plush facility in which research programs could be carried out which are not now possible.

The Interdisciplinary Laboratory for Hybrid Computation met frequently during the year to discuss purchase of equipment and the direction the laboratory should take.

The concept of the Interdisciplinary Laboratories will be seriously reviewed during the coming summer to make certain that we are in fact enhancing the environment for faculty research and interaction rather than creating unnecessary barriers to cooperation.

4. Relations with High Schools

There has been a greater effort than ever this past year to work with high school faculties. Many people in the physical sciences and industrial arts areas have been on our campus this year as a result of the encouragement given by Assistant Dean Marcus. The rapport which has developed seems to be at a high point. In addition, we have made special efforts to attract outstanding high school students to the campus and have managed to recruit some good young people who probably would not have come except for this kind of contact.

An even closer relationship with the secondary schools of the region is assured as a result of our participation in the new Engineering Concepts Curriculum Project entitled the "Man Made World". Because of the enthusiasm of Mr. Charles Camp and Mr. Ronald Fitzgerald, Amherst Regional High School was this past year the first secondary school in the State to offer this course. Through the good efforts of Dr. Conrad Wogrin of the Research Computing Center a remote access to the CDC3600 Computer was made available to students in the High School. The course and the use of our computer has met with great success and it is anticipated that two sections will be required at the High School to meet student demand next year.

The excellent cooperation of the University and the High School and in particular the individuals mentioned above resulted in the University being selected as one of three schools in the Nation to run a summer institute to train additional high school teachers in the techniques and concepts of this exciting new course. Dean Marcus and Dr. Wogrin are coordinating the Institute, supported by Professor John Dittfach and Mr. Charles Camp. Thirty high school teachers will participate. The exciting possibility exists that a TV series on Channel 5, WHDH, in Boston may develop as a result of our Summer Institute.

5. Relations with Community Colleges

With the recognition that, with the growth in size and number of the community colleges, the student numbers would increase rapidly, the School of Engineering continued its efforts during the past year to establish closer working relationships with these institutions. Assistant Dean Marcus visited the faculties in the mathematics, physical sciences, and technology areas of many of the schools in the fall of 1967. He outlined, in detail, by means of a brochure given each of the schools, the programs of the School of Engineering (departmental curricula, texts, prerequisites, syllibi) and offered the support of our School in the development of programs, terminal as well as transfer, wherever such aid might prove feasible.

An interesting and profitable experiment was tried in the Department of Electrical Engineering in which an instructor from the Berkshire Community College was invited to teach one of the basic sophomore courses to our students. Close guidance by regular Electrical Engineering faculty members gave the instructor an excellent feeling for the level at which our course is taught and the kind of laboratory experiments which accompany the course. It was unfortunate that lack of funds prohibited us from continuing the experiment another semester with other people. It appears possible, however, that the new Education Professions Act recently passed by the Congress may provide funds to broaden our experience and to build the competence of the community college teacher in a major way.

6. Relations with Alumni

There has been a strong attempt to reactivate our Engineering Alumni Association and a group of our Alumni has been meeting to develop a more viable organization. One major change approved by the Board of Directors of the Engineering Alumni Association was to offer two continuing $1,000. scholarships to prospective outstanding engineering students. Two excellent young men were offered these scholarships and accepted them. It is only by attracting a few really outstanding students that we can obtain student leaders so necessary in a growing, dynamic University.

Our closer relations with the Alumni of the School has resulted in a secondary benefit in that the School was awarded $1,000 by the Home Builders Association of Greater Springfield to give two $500 scholarships to deserving young men from the Greater Springfield area.

It has been recognized by many on our campus that one of our major weaknesses is spreading the story of the University throughout the Commonwealth. Most would agree that the University has an excellent reputation nationally which seems to diminish the closer one gets to Boston. One might say the curve crosses through zero somewhere around Worcester and becomes negative approaching Boston.

An ad hoc committee consisting of Professors Duus, Gluckstern, Lindsey, Marcus, McEwen, Wogrin, Segool, and the writer, with financial support from the Provost and the Alumni Association, brought twenty key industrial leaders and alumni to the campus May 3 and 4, 1968, to help us examine past growth, present growth status and potential for future growth. The two-day program focused on "The New University of Massachusetts -- A View of Science and Engineering". It was generally agreed by all who participated in the program that we learned much from one another. The major advantage to the University is that we made twenty friends who can be of major help to us in the future. Those of us who participated in the Program enthusiastically agreed that we wanted to run a second program in the fall and a tentative date of November 8 and 9 has been set. We hope to rectify the one problem we had of not being able to attract a single State legislator.

7. Service to Industry

i) The Department of Industrial Engineering plans to provide a three-day conference for the 8th Air Force of the United States Air Force in the Fall of 1968. The purpose of this course will be to provide the participants with a clear understanding of the role of the industrial engineer. Speakers will be from academic and business organizations throughout the United States.

The Department has started a more active relationship with the Massachusetts Hospital Association and it is expected that a hospital-industrial engineering program, both at the academic and research levels, will be developed within the next two years.

ii) Commonwealth Technical Resource Service

COMTECH has continued to develop its links with the industrial, business, commercial, educational, and governmental environments within and, on a more limited basis, outside the Commonwealth.

The broadest outward reach of COMTECH manifests itself in its technology transfer responsibilities under the State Technical Services Act of 1965. Its FIVE YEAR PLAN for STSA implementation has become a reference manual with respect to certain of its analyses. Currently, its examination of the Massachusetts economy is the acceptable model for the treatment being developed by the Central Office for Program Planning and Research, Executive Office for Administration and Finance, for the New England Regional Commission.

A FY68 Annual Implementation Program for STSA was developed, comprising twenty-three projects to be performed by ten participating institutions, budgeted for $359,000. However, limitations of non-Federal funding have constrained the FY68 Annual Program to nine projects to be performed by five participating institutions, budgeted for $133,000. These projects will be supported by Federal Grants already awarded in the amount of $71,000, plus $62,000 in non-Federal funds, close to 60% of which will be in the form of University contributions of services and facilities. FY68 funding has occurred as of May, 1968 and all funded projects will be initiated by the close of June, 1968.

Eleven more of the original twenty-three projects are certain to be approved and funded by the OSTS when formally submitted as components of a FY69 Annual Program. A non-Federal funding base by State appropriation has now been established for FY69 which should expedite progress immensely.

III Faculty Recognition

The accomplishments discussed above represent of course the dedication and hard work of the faculty of the School. The key to the future of the School is to provide the environment which can enhance the productivity of the faculty. This point will be discussed in considerable detail under another section of this report.

We were delighted to report in last year's report the excellent additions to the faculty of the School. Nineteen new faculty members were listed. Subsequent to the writing of the report we were fortunate in attracting the following faculty members for 1967-68:

Assistant Professor J. M. Colonell, PhD, Stanford University, Ocean Engineering

Professor W. E. Heronemus, MS, Massachusetts Institute of Tech., " "

Assistant Professor L. N. Kuzminski, PhD, UMASS, Environmental Engineering

Continued excellent recruiting efforts by all department heads in the School have resulted in eleven new faculty members to be added during the coming academic year. It is expected that two offers now outstanding in Electrical Engineering will be accepted by July 1, 1968. The new faculty members are listed below:

<u>Chemical Engineering</u>

Professor J. M. Douglas	PhD	University of Delaware
Assoc. Prof. R. L. Laurence	PhD	Massachusetts Institute of Technology

<u>Civil Engineering</u>

Ass't. Prof. L. A. Webster	PhD	University of Illinois

Electrical Engineering

Visiting Professor Samuel Seely	PhD	Columbia University
Professor D. H. Navon	PhD	Purdue University
Assoc. Professor T. W. Tang	PhD	Brown University
Ass't. Professor D. R. Jackson	PhD	University of Washington

Industrial Engineering

Visiting Assoc. Prof. Benjamin Davies	PhD	Univ. of Birmingham
Assoc. Professor R. D. Davis	PhD	Columbia University

Mechanical and Aerospace Engineering

Professor F. R. Erskine Crossley	PhD	Yale University
Professor Gabriel Horvay	PhD	Columbia University

Two distinguished and respected members of our faculty retired at the end of the year. Professor C. A. Keyser of the Department of Mechanical and Aerospace Engineering, who won the Western Electric-ASEE Outstanding Teacher Award last year, has decided to devote full time to business interests, consulting and writing. Professor C. S. Roys reached mandatory retirement age but plans to remain active in writing and working with students. We wish both Professor Keyser and Professor Roys great success in future endeavors.

Associate Dean Lindsey has been awarded sabbatical leave and a Federal Water Pollution Control Administration Fellowship to carry out studies in Environmental Engineering at the University of Texas.

Dr. R. R. Archer, Professor of Civil Engineering, was awarded a Public Health Service Special Research Fellowship for study at MIT.

Assistant Professor D. E. Scott of the Department of Electrical Engineering has submitted his doctoral thesis and expects to be awarded the doctorate from Worcester Polytechnic Institute during the coming summer.

We look forward to the return of Professor E. J. Rising from England and Professor Charles Bissey from the University of Rhode Island this fall.

IV PLANNING

Planning is underway at all levels of the School of Engineering. Each department is now developing new undergraduate curricula to reflect the changes in the number of credits required for graduation and the revised freshman program. A brief review of our five-year planning completed in December, 1966, shows that we are reasonably close to our predictions on staff, enrollments and research activity.

Of greatest importance to the School as we plan and grow according to plan is the construction of a new engineering building by 1972. Professor John Eldridge, Chairman of the Building Committee has developed a program for the new space in collaboration with faculty groups representing various research interests. Dr. Eldridge points out in the annual report for the Department of Chemical Engineering the seriousness of the situation with respect to his teaching and research activities. The planning for the entire School is meaningless unless 100,000 net square feet of new space is available to us by 1972.

It has become increasingly evident that all space now available to the School and the space which will be returned to us when the Research Computing Center moves, will be fully occupied by 1970. Faculty and administrative morale can continue at high levels if a new building is started in 1970. On the other hand, if no start on new space is made by 1970 we can expect serious morale problems on the part of everyone in the School. Two years ago our planning called for people and additional support for graduate students as the main objectives for developing the School. Outstanding progress has been made toward achieving those objectives. It is crucial that our new objective of housing the productive scholars and students now on board be met with as much success.

Two new doctoral programs will be presented to the University for approval next year; (a) Ocean Engineering and (b) Aerospace Engineering. It is reasonable to extend our research activity on deep-sea submersible to the formulation of a graduate program in the area. It is abundantly clear that this Nation has committed itself to a massive effort to exploit our global resources; and oceanography, and ocean engineering, is of prime importance in this endeavor. As a result much thought and effort is going into planning and implementing a program that will help us realize the full potential of the sea. Before such a program can possibly succeed, we must find solutions to basic problems relating to trained manpower in marine sciences and engineering. The School of Engineering has a unique role to play in meeting manpower requirements in ocean engineering since we now have one of the most active research programs and capable faculty group in the Nation. Student interest has been demonstrated by the excellent participation in ocean engineering seminars and course work in our pilot ocean engineering course offered this past spring. Today only five universities in the Nation offer ocean engineering programs at the graduate level, most schools offer programs leading to graduate degrees in conventional majors with ocean engineering minors.

The initiation of the Aerospace Engineering undergraduate program will result in graduates as early as the fall of 1969. We are planning, during the coming year, to initiate MS and PhD programs in Aerospace Engineering. One can easily justify the initiation of these programs by quickly scanning the U. S. House of Representatives' Hearing on the FY69 NASA Budget. A national goal has been proclaimed that we shall continue the Space Program beyond placing a man on the moon. Engineering talent trained to the highest levels of sophistication will be needed over the next decade to support our Nation's endeavors in Space.

The Executive Council of the School of Engineering spent a great deal of time last year reviewing the Five Year Plan for the development of the School. Each department carefully evaluated its enrollment projections, its plans for research and growth of the graduate program, and developed the Five Year Plan accordingly. These plans were put together, discussed by the Executive Council, and constitute what we feel to be our Five Year Plan for the School of Engineering.

At the present time the School of Engineering has approximately one thousand undergraduate students and one-hundred and seventy-five graduate students. Our plans are that we will keep a constant fraction of the University undergraduate enrollment, which at this time appears to be about nine or ten per cent. We do feel, however, that the graduate enrollment in the School of Engineering will probably exceed the rate of growth of the University Graduate School. We, therefore, are planning that by 1973 we will have approximately 2,000 undergraduate students and 600 graduate students in the School.

It probably would be worthwhile to comment a bit on the projected enrollments in the School of Engineering. Probably the doubling of the undergraduate enrollment but maintaining a constant percentage of the University population is a conservative figure. Although Engineering from a National point of view has remained approximately constant at the undergraduate level, several changes will likely occur in the immediate future. The past three Wars have resulted in a veterans' training program at universities. In each case the majority of veterans studied Engineering and, looking at the enrollment trends over the past you can observe peaks in engineering enrollments occurring in 1920, 1948 and 1953. It is very likely, therefore, that the veterans returning from the Viet Nam conflict will also be interested in Engineering and we may therefore see a larger growth in the undergraduate growth than we are presently considering.

Another factor in the likelihood of larger enrollments at the undergraduate level in Engineering is the rather intense demand for engineers by American industry and Government. Projections by the American Society for Engineering Education and the Engineering Manpower Commission indicate that approximately 70,000 engineers will be needed each year, beginning about 1974. At the present time Engineering Schools of the Nation are graduating roughly 30-35,000 engineers per year. We have already observed dramatic increases in starting salaries for bachelors' degrees in Engi-

neering. The average for the June graduates of 1968 will be some where around $9500 to $10,000 a year. This average starting salary will continue to increase as long as there is a shortage of graduating engineers. Another factor comes from a situation which is an intriguing one. Although we turned out roughly 30,000 engineers at the undergraduate level last year, we actually imported 9,000 engineers from foreign lands. This meant that one out of four engineers entering the profession were actually of foreign origin. The new immigration laws which will go into effect July 1, 1968, will tend to reduce this number substantially. Industry will have serious problems meeting its manpower requirements. This situation coupled with the Draft will lead to some very critical problems for American industry. Probably the result will be further increases in starting salaries for new engineers. Clearly, this will begin to filter back to the high schools and we will see rather dramatic increases in Engineering enrollments.

To some extent this is already taking place. We are rather confident that our undergraduate enrollment will increase by twenty per cent at the freshman level. It is too early of course to give factual data at this point in time but we are optimistic.

A few comments should also be made concerning the likelihood of a dramatic increase at the graduate level in the School of Engineering. Although the Nation's engineering schools have been turning out roughly 2,000 engineers at the doctoral level for the past few years, prior to this, as recently as the early '60's, the number was in the order of six hundred per year. Rather dramatic growth has taken place in the past few years and the predictions are that even more dramatic growth will take place in the next five. Projections again by the Office of Education and the ASEE indicate that Engineering should lead all disciplines in the production of doctorates by 1975. The number that we are projecting for 1975 nationally is approximately 7,000. The School of Engineering at the University of Massachusetts must experience dramatic growth as will other developing institutions in the Nation if this projected increase is to take place. It is rather clear that prestige, established engineering schools such as MIT and Harvard will not experience major growth in that they have essentially obtained a mature level. It will be up to the state universities that have lagged somewhat to provide the necessary graduate opportunities for this needed production.

The University of Massachusetts is in a unique situation with respect to other state universities in that we are the only public institution of higher education authorized by law to award a doctorate. This means, therefore, that we will become a center for feeder institutions such as SMTI and the Lowell Technological Institute. One can guess that other four-year colleges of engineering will probably develop in the state system or New England State Systems which would also become feeder institutions for the School of Engineering here at the University.

V PROBLEMS

Many of the problems discussed in last year's annual report continue to plague the faculty and students of the School of Engineering. I shall repeat items 1 through 6 of last year's report as follows:

Unresolved Problems of 1966-67

1. As indicated above and reinforced by Dr. John Eldridge's annual report, one major problem as we view the immediate future is that of space. Although we are in a reasonably good situation at the present time as far as the entire School is concerned, the Chemical Engineers are already beginning to experience severe space problems. If we are to grow over the next five years we must begin planning a new building in FY69 at the latest. The building should contain 100,000 net square feet.

2. Dr. John R. Dixon, Head of the Mechanical Aerospace Engineering Department, raises the question of library services and organization. Others have also commented on the problem in verbal reports. The problem is not connected with existing personnel but rather with the broader situation of departmental versus divisional libraries. The Executive Council of the School stands on record as being completely in favor of divisional libraries (i.e. Mathematics, Physical Sciences, and Engineering) as the only feasible way of providing first-rate library services to students and faculty members in the School of Engineering. Excellent information services are an important facet of creating the stimulating and satisfying environment for creative and productive work in the School. Engineering leans heavily on the physical sciences and mathematics for its underpinnings and a first-rate collection in these areas plus easy and rapid access to this collection is of great importance.

3. The faculty of the School of Engineering seek ways to recruit outstanding students at both the graduate and undergraduate level. The former situation will be solved by bringing together faculties of national and in some cases, international reputations, and developing support for the graduate students. Recruiting outstanding undergraduate students seems to be a more difficult problem in view of the limitation on out of state student enrollments. We must seek, under these limitations, to attract a greater number of first-rate Massachusetts resident students. Our competition for good students in Engineering represents some of the finest engineering schools in the Nation. Better scholarship awards independent of need must be made available so that we can attract 10-15 students of outstanding scholarship and leadership ability to set the pace for classes. Some efforts have been made in this direction but much greater support is required before significant changes can be made.

The writer believes that to a very great extent the youngsters of the Commonwealth do not realize the quality of training they can obtain at their State University. Much of this reflects the history of the institution, but I strongly believe that a much more active public relations effort which seeks not to propagandize but simply to tell the actual story of the University's progress would do much to attract a higher level student to our University.

4. Secretarial service for our departments has improved to some extent during the past year but as we add productive faculty members in each department, dramatic improvement in secretarial service is required. This is another facet of providing the environment conducive to productive activity. Every effort will be made to provide adequate clerical and secretarial service as well as to move toward one man offices and reasonable telephone service.

5. Because of the background of "shop teaching" in the School of Engineering we are blessed with excellent technician services. Several of the technicians urgently need upgrading in ranks because of their excellent craftmanship and devotion to the School.

The problem that faces the University, I believe, is how we can provide reasonable research services (i.e. machinists, electronic technicians, photographic laboratories, etc.) for all the researchers of the University. In the past, the School of Engineering offered to do certain work for researchers on a first come, first serve, basis. As our faculty increase their research efforts, it becomes clear that we can no longer provide service on any reasonable basis for the rest of the campus. By the end of the coming academic year our technicians will be fully occupied (and likely lagging) with research needs of the School. Only one reasonable solution exists for the problem in my opinion and that is to seek ways of charging grants and contracts as well as department accounts for services provided by a central research service operation. In this way funds can be made available to hire additional, and in some cases, more specialized personnel, so that service can keep up with demand. There is a real danger that if the University does not provide such service that private enterprise will -- to the inconvenience and unhappiness of the faculty.

The School of Engineering stands ready through the Engineering Research Institute to offer such services and to add the necessary crafts and capabilities if a system of charges for services rendered can be developed. It should be mentioned that efforts are being made by several people at the University to institute such services.

6. One of the most difficult problems we face in the School of Engineering is that of upgrading capable, dedicated and productive non-professional personnel. As we understand the system, it is nearly impossible to reward capable and loyal employees in the School. Rather, they must leave the job they are doing well to attain promotion. This system destroys developing a group with real "esprit de corps" and encourages "job hopping" for promotion. The Governor's office apparently recognizes the problem but hopefully, we can do something at the local level to encourage promotions in a given job for work well done. We cannot let job descriptions, job titles, and other civil service red tape stand in the way of promotions for loyal and hard working employees.

To these unresolved problems of 1966-67 should be added several new problems which have become increasingly evident over the past year:

1. Dr. J. R. Dixon discusses the problem of supporting our faculty members with reasonable funds for supplies, equipment, clerical and technical assistance, telephones, and furniture. He points out that State support at less than $1000 per faculty member for equipment when we are developing new programs and courses, attempting to modernize laboratory facilities, and initiate new research programs, is low by an order of magnitude. Concern is expressed by Dr. Dixon that levels of funding in these supporting areas will have to increase dramatically, and soon, if the gains in terms of faculty are to be permanently consolidated.

The same situation exists in each of the departments in the School of Engineering. It is impossible to almost triple the productive faculty in the School without substantial increases in each of the subsidiary accounts. The problem is compounded by the fact that we have two mature graduate programs with three others rapidly reaching the point where doctoral students will be carrying out thesis research. The funds needed in Chemical Engineering to support thesis research have substantially exceeded funds available. Other programs will become equally costly in the next year or two and it will become impossible to expand graduate programs unless substantial increases in the subsidiary accounts are available.

2. The writer has been involved in a limited way during the past year with various legislative committees and industrial leaders of the Commonwealth. It has become increasingly clear that despite the magnificent efforts of Dean Redfern that we are not getting the story of the dynamic, excellent University being developed for the youngsters of the State across to important people who might help us. Without intending to attack anyone at the University, never-the-less it seems appropriate to call attention to the problem that exists and to urge the University to take a hard look at how we might improve our image in the State and particularly with the Legislature. Every faculty member and administrator in the School stands ready to assist the University by giving talks throughout the State and by serving on any kind of task force which might be established.

VI Acknowledgements

I wish to express my deep gratitude to the faculty, department heads, colleagues in the Office of the Dean, secretaries, and technicians, for their generous help and dedication during the past year. Without everyone's spirit of cooperation and enthusiasm to continue the development of a quality School of Engineering none of the progress and accomplishment discussed above would have been possible.

The Administration of the University has provided good support to the School considering the seriousness of the State funding and this support is gratefully acknowledged.

Special thanks go to Mrs. Oretta Taylor for doing the work of two people during the year with a cheerful, happy attitude.

Respectfully submitted,

K. G. Picha, Dean
School of Engineering

KGP:t

APPENDIX I

APPROPRIATION DATA

. Total Appropriation, School of Engineering

		1965-66	1966-67	1967-68
01	Salaries, Permanent	$775,343.	$907,307.	$1,164,908.76
02	Salaries, Other	58,669.	79,362	103,375.25
03	Services, Non-Empl.	22,800	31,500.	38,238,23
04	Food	100.	100.	100.00
10	Travel & Automotive Exp.	7,250.	8,000.	10,994.65
11	Advr. & Printing	250.	800.	
12	Maint., Repairs, Alts. & Repl.	8,400.	10,500.	11,385.39
13	Special Supplies & Expenses	20,500.	24,000.	35,547.28
14	Office & Admin. Exp.	2,700.	2,000.	2,361.47
14-1	Telephone	4,400.	7,000.	13,197.15
15	Equipment	35,000.	59,650.	60,002.82
15-1	"		11,150.*	
16	Rentals	4,200.	8,000.	5,013.53

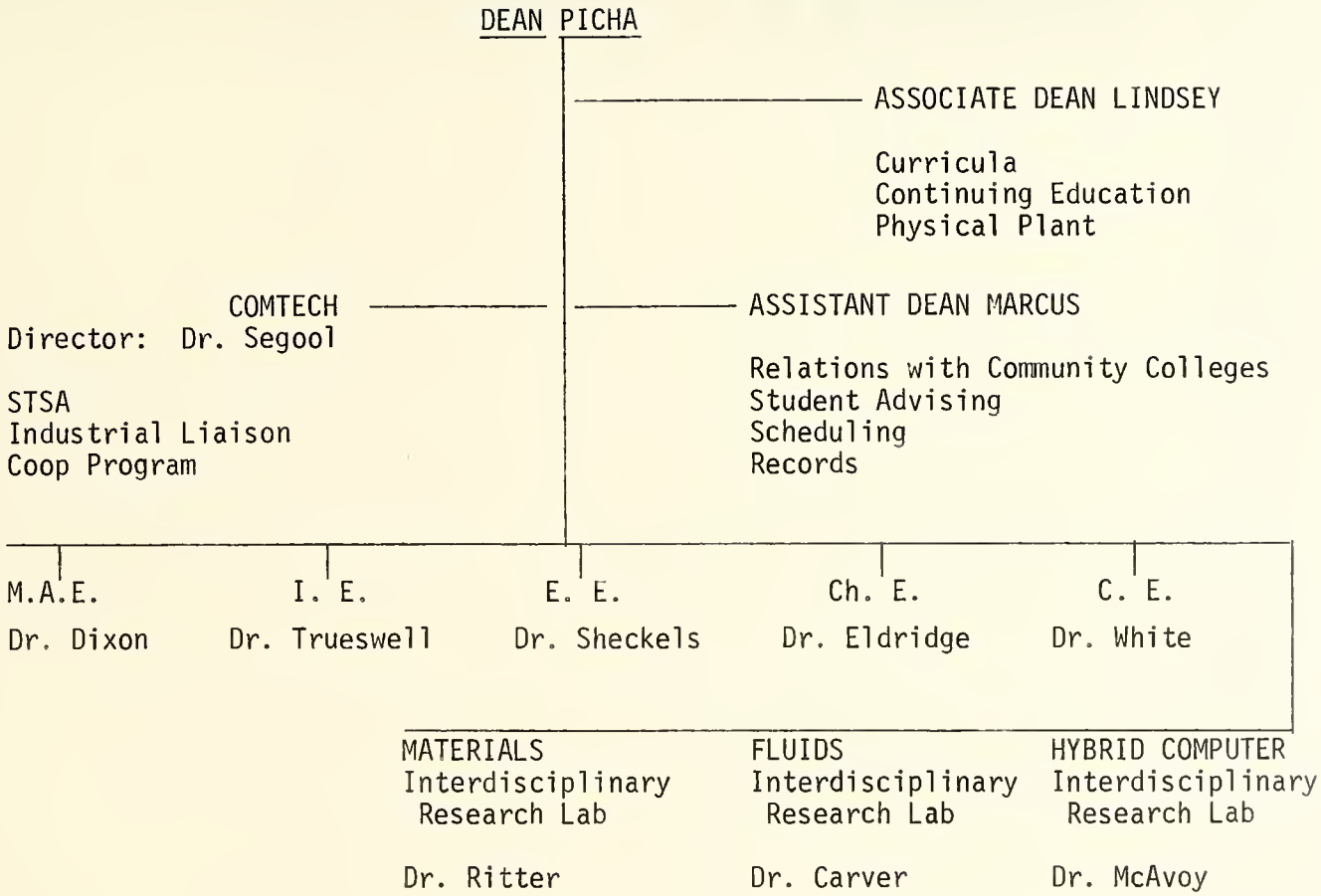
*Matching for U. S. Office of Education Equipment Grant

APPENDIX II

PERSONNEL & ORGANIZATION CHART

ORGANIZATION CHART

SCHOOL OF ENGINEERING



The following table lists the total personnel (full time equivalent) in the School of Engineering as of September, 1968:

	1965	1966	1967
Deans	2	2	3
Department Heads	5	5	5
Professors	15	22	23
Associate Professors	18	24.5	21
Assistant Professors	17	18.5	31
Instructors	2	2	2
Lecturers	1	1	2

The following represents the breakdown by rank in each of the five departments (excluding Deans):

	Ch. E.			C. E.			E. E.			I. E.			M. A. E.			Basic		
	65	66	67	65	66	67	65	66	67	65	66	67	65	66	67	65	66	67
Professors (incl. Heads)	2	3	3	6	7	9	3	3	3	0	0	1	4	6	6	0	0	1
Associate Professors	2	3	3	5	5	4	7	7	7	2	3	1	5	5	5	1.5	1.5	1
Assistant Professors	2	2	3	6	4	6	4	4	6	1	2	5	3	4	9	3	3	2
Instructors	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	.5
Adjunct Assoc. Prof.	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

APPENDIX III

STUDENTS SERVED

STUDENT DATA

STUDENTS SERVED

			Fall '65	Fall '66	Fall '67
1. Engineering School Totals					
(a)	(i)	Number of Undergraduate Majors	894	961	960
	(ii)	Number of Graduate Students	125	157	179
(b)		Number of students taught	2430	3078	3534
2. Chemical Engineering					
(a)	(i)	Number of Undergraduate Majors	78	84	96
	(ii)	Number of Graduate Students	38	46	50
(b)		Number of students taught	229	159	237
3. Civil Engineering					
(a)	(i)	Number of Undergraduate Majors	139	167	163
	(ii)	Number of Graduate Students	34	46	40
(b)		Number of students taught	729	753	892
4. Electrical Engineering					
(a)	(i)	Number of Undergraduate Majors	159	169	177
	(ii)	Number of Graduate Students	18	21	28
(b)		Number of students taught	289	764	834
5. Industrial Engineering					
(a)	(i)	Number of Undergraduate Majors	47	54	57
	(ii)	Number of Graduate Students	10	20	29
(b)		Number of students taught	84	95	159
6. Mechanical & Aerospace Engineering					
(a)	(i)	Number of Undergraduate Majors	148	160	189
	(ii)	Number of Graduate Students	10	24	32
(b)		Number of students taught		794	916
7. Undesignated Engineering					
Basic and Unassigned					
(a)		Number of Undergraduate Majors	275	295	278
(b)		Number of students taught			486

I NUMBER OF DEGREES GRANTED

	Sept. '65 to June '66	Sept. '66 to June '67	Sept. '67 to June '68
Bachelor of Science	132	121	161
Master of Science	35	46	55
Doctor of Philosophy			3
1. Chemical Engineering			
B.S.	20	12	29
M.S.	10	10	10
Ph.D.	0	0	2
2. Civil Engineering			
B.S.	37	33	35
M.S.	4	12	16
Ph.D.	0	0	1
3. Electrical Engineering			
B.S.	34	33	47
M.S.	3	11	11
Ph.D.	0	0	0
4. Industrial Engineering			
B.S.	11	14	12
M.S.	8	5	7
Ph.D.	0	0	0
5. Mechanical & Aerospace Engineering			
B.S.	30	29	38
M.S.	10	8	11
Ph.D.	0	0	0

APPENDIX IV

PROFESSIONAL ACTIVITIES OF THE FACULTY

Faculty Publications and Patents

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Kirk, R. S.
"Method and Apparatus for Igniting Underground Formations", U.S. Patent No. 3,376,928, April 9, 1968

McAvoy, T. J. (with Johnson, E. F.)
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McAvoy, T. J.
"Least-Square Dead-Time Approximations", I.E.E.E. Transactions In Computers, Vol. C-17, pp 174-178, Feb., 1968

Lenz, R. W.
Polymer Preprints, 8, No. 2, Am. Chem. Soc., Sept., 1967 jj + 717 pp (Editor)

Lenz, R. W.
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"Poly(ester-acetals) from Geometric Isomers of Cyclic Acetal of Methyl Azelaaldehydate, Polymer Preprints, 8, No. 2, 1084 (1967)

Roblee, L.H.S., Jr. (with O'Bara, J. T., and Killian, E. S.)
"Dropwise Condensation of Steam at Atmospheric and Above Atmospheric Pressures", Chemical Engineering Science, Vol. 22, pp 1305-1314,1967 Pergamon Press Ltd., Oxford

Roblee, L.H.S., Jr.
"Dropwise Condensation of Steam at Elevated Pressures", Office of Naval Research Technical Report No. 2, May 15, 1968

(ii) Civil Engineering

Dzialo, Frederick (with W. Hoppman II)
"Flexural Vibrations of Circularly Stiffened Circular Plates with Consideration of Rotatory Inertia", J. Appl. Mech. - Trans.ASME Sept.'67

Chajes, A., Dzialo, F. and White, M.P.
"Influence of Ship Mobility on the Lateral Forces Produced by Blast", Shock and Vibration Bulletin, January, 1968

Hendrickson, K.
"Small Watershed Storage Increase Using Low Dams", Proc. of Water Resources Symposium, Amherst, Mass., pp. 141-152

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"The Use of Seismic Principles for the Foundation Design of a Large Optical Test Stand Facility", Proc. of Symposium on Wave Propagation and Dynamic Properties of Earth Materials, Albuquerque, N. M., Aug.'67

Nebiker, J. H.(and Munz, K.)
"Die Bemessung von Trockenbeeten fuer Klaerschlamm", Schweizerische Bauzeitung, November, 1967

Nebiker, J. H., Adrian, D. D. and Lutin, P. A.
"Source Control of Water Treatment Waste Solids", Civil Engineering Department Report, EVE 7-68-1 (122 pp.)

Adrian, D. D.
"Some Aspects of Infiltration into Soils", Proc. of 15th Southern Water Resources and Pollution Control Conf., Raleigh, N.C., Dec.,1967

Adrian, D. D.
"Laboratory Facilities for Flow in Porous Media Research", Proc. of First Int. Symposium of the I.D.L. Committee for Fluid Dynamics, School of Engineering, Univ. of Mass., Dec., 1967

Higgins, G. R.
"Yield of Streams in Massachusetts", Mass. Water Resources Research Center, University of Mass., Amherst, Mass. (175 pp.)

Higgins, G. R.
"Undergraduate Fluid Mechanics Laboratory at University of Massachusetts", Proc. of First Int. Symposium of the I.D.L. Committee for Fluid Dynamics, School of Engineering, Univ. of Mass., Dec., 1967

White, M. P.
"Earthquake Damage to a Uniform Shear-flexible Structure", Archiwum Inzynierii Ladowej, Warsaw, October, 1967

(iii) Electrical Engineering

Hutchinson, Charles E.
"An Analysis of the Effect of a Particular Class of PFM on Noise Inputs", Proceedings of the 1968 National Telemetering Conference, pp. 114-118, Houston, Texas

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"Harmonic Generation in a Plasma Column", Digest of 1967 International Symposium on Antennas and Propagation, I.E.E.E. Catalog No. 3D52, pp. 178-186, October 1967

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"Millimeter-Wave Generation with Plasma Devices: The State of The Art", Proceedings of the I.E.E.E., Vol. 56, No. 6, June 1968

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"Control of Time Variable Nonlinear Multivariable Systems Using Liapunov's Direct Method", Proceedings of the 1966 Joint Automatic Control Conference, August 1966, pp 475-484

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"The Influence of First and Second Formants on the Intelligibility of Clipped Speech", Journal of Audio Engineering Society, Vol. 16, No. 2, pp. 182-185, April 1968

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"The Acoustics of Speech Production", Proceedings of the First Internal Symposium of the Interdisciplinary Laboratory Committee for Fluid Dynamics, pp. 15-22, December 1967

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B.C.L. Report No. 7.3, Biological Computer Laboratory,
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"Inventory Control with a Randomly Available Discount Purchase Price", accepted for publication, Operations Research Quarterly

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"Inventory Control with Random and Regular Replenishment", accepted for publication, Journal of Industrial Engineering

Rubel, Ronald
"Decision Analysis: A Mathematical Aid for Clinical Decisions", accepted for publication, Medical Times

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"Educational Goals, the Role of Industrial Engineering and You", JETS Journal, March 1968

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"The Expanding Role of Industrial Engineering", JETS Journal, 1967

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"Compressibility and Viscosity Effects in Curved Flows", Proceedings of the 6th Conference of the Society of Engineering Science, Nov.1967, Huntsville, Alabama

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"Nonlinear Free Transverse Vibrations of Inflatable Shallow Shells", published in the Proceedings of the First International Colloquium on Pneumatic Structures, University of Stuttgart, Germany, 1967

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"Heat Transfer Studies of Aerodynamic Heating of Transition Sections of Apollo V During Launch", Internal Report, Aero-Astrodynamics Laboratory, Thermal Environment Branch, R-AERO-AT, George C. Marshall Space Flight Center, Huntsville, Alabama, August, 1967

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"Monte Carlo Methods as an Aid in Teaching Heat Conduction", Bulletin of Mechanical Engineering Education, 7 p. 77086, 1968

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"Distributions of Temperature, Survival Probability and Vitamin Retention in Conduction Heated Cylindrical Food Containers During Thermal Processing", Ibid

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"The Solution of Steady State Convection Problems by the Fixed Random Walk Method", accepted for publication in Journal of Heat Transfer

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"Graphics Teachers Go to School", Engineering Graphics, Feb. 1968, Vol. 8, No. 2, page 13 & 25

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"The Workshops", Engineering Graphics & Design, (Special Edition of Journal of Engineering Graphics, Vol. 31, #4, pp 40-41

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Picha, K. G.
"Modern Technology in Home Building", Massachusetts Builders' Association, UMass, 1968

Picha, K. G.
"Progress Report -- School of Engineering" to Amherst Kiwanis Club, 1968

(ii) Chemical Engineering

Chappelear, D. C.
"Polymerization Reaction Engineering - A Review", ACS Meeting, San Francisco, April, 1968

Lenz, R. W.
"Poly(ester-acetals) from Geometric Isomers of Cyclic Acetals of Methyl Azelaaldehydate", paper presented at the National Meeting ofthe A.C.S., Chicago, Illinois, Sept., 1967

Lenz, R. W.
"Preparation and Properties of Poly(ester-acetals)" seminar presented to theAkron Polymer Lecture Group, Akron, Ohio, Nov. 1967

Lenz, R. W.
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"Poly(ester-acetals)", seminar presented at the Silicone Products Dept. Research Laboratory, General Electric Co., Waterford, N. Y., March, 1968

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Short, W. L.
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Vanpee, M.
"F-Numbers of Metal Oxides", seminar presented at Cambridge Air Force Laboratories, Bedford, Mass., May, 1968

(iii) Civil Engineering

Chajes, A., Dzialo, F. J. and White, M.P.
"Influence of Ship Mobility on Internal Forces Produced by Blast", Shock and Vibration Symposium, Orlando, Florida, October, 1967

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"Navigation", Lecture for Special Problems Course on Ocean Engineering, University of Massachusetts, May 6, 1968

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"Control System Design Using Liapunov's Techniques", Nov. 3, 1967, Yale Univ.

Thomas, Ian B.
"Speech Perception and Synthesis", Feb. 12, 1968, Psychology Colloquim, Univ. of Massachusetts, Amherst.

Thomas, Ian B.
"Speech Recognition", April 16, 1968, Computer Science Seminar, Univ. of Mass.

) Industrial Engineering

Rikkers, Robert
Seminar, University of Rhode Island and School of Business Administration, University of Massachusetts

Trueswell, R. W. (with Rath and Rubenstein)
"Some Preliminary Experiments in a Model of Information Seeking Style of Researchers", 20th National Conference on the Administration of Research,1968

Trueswell, R. W.
"Current and Future Trends in Industrial Engineering Research", 10th Bi-Annual Conference of Alpha Pi Mu

i)Mechanical and Aerospace Engineering

Boothroyd, Geoffrey
"Results of Some Recent Work on Vibratory Feeding", Paper presented to International C.I.R.P. Conference, Michigan, September 1967

Boothroyd, Geoffrey, Eagle, J. and Chisholm, A. W. J.
"Temperatures on the Worn Flank of a Tool During Metal Cutting", Paper presented to International M.T.D.R. Conference, Manchester, England, September, 1967.

Day, Robert W.
"Projected Aerodynamic Research Facility Requirements Based on Present Limitations", presented at the First Internal Symposium School of Engineering, Univ. of Mass., Amherst, Mass., Dec. 2, 1967

Fillo, John A.
"Compressibility and Viscosity Effects in Curved Flows", proceedings of the Society of Engineering Science, Huntsville, Alabama, October, 1967

Murthy, S.N.B.
"Compressibility and Viscosity Effects in Curved Flows", proceedings of the 6th Conference of the Society of Engineering Science, November, 1967, Huntsville, Alabama

Nash, William A.
"Dynamic Buckling of Cylindrical and Conical Shells", presented at the Second Symposium of the Theory of Elastic Shells, sponsored by the International Union of Theoretical and Applied Mechanics, Copenhagen, Denmark, September 2 - 7, 1967

Poli, Corrado R.
"A Study of Retrieval Techniques for Tethered Astronauts", presented at the 2nd IFAC Symposium for Automatic Control in Space, Vienna, Austria, September, 1967

Zahradnik, John W. (Manson, John E., Novak, Robert J.)
"Analog Simulation of a Time-Shared Automatically Controlled C. A. Apple Storage", presented at the 1967 Winter Meeting of the American Society of Agricultural Engineers, Cobo Hall, Detroit, Michigan, Dec. 12-15,'67

Zahradnik, John W.
"An "Update" on CO_2 Absorption with Lime", presented at the New England Apple Harvesting and Storage Symposium, Mahar Auditorium, Univ. of Massachusetts, Amherst, Mass., March 26 and 27, 1968

Zahradnik, John W.
"The Apple Storage of the Future?", presented at the New England Apple Harvesting and Storage Symposium, Mahar Auditorium, Univ. of Massachusetts, Amherst, Massachusetts, March 26 and 27, 1968

Zahradnik, John W.(Teixeira, A. A., Zinsmeister, G. E. and Dixon, John R.)
"Computer Optimization of Nutrient Retention in Thermal Processing Subject to the Constraint of Bacterial Lethality", presented at the Institute of Food Technology, 28th Annual Meeting, Philadelphia, Pennsylvania, May 19-24,'68

Zahradnik, John W.(Teixeira, A. A., Zinsmeister, G. E. and Dixon, John R.)
"Distributions of Temperature, Survival Probability and Vitamin Retention in Conduction Heated Cylindrical Food Containers During Thermal Processing", presented at the Institute of Food Technology, 28th Annual Meeting, Philadelphia, Pennsylvania, May 19-24, 1968

Zahradnik, John W. (Teixeira, A. A., Zinsmeister, G. E., Dixon, John R.)
"Distributions of Temperature, Survival Probability and Vitamin Retention in Conduction Heated Cylindrical Food Containers During Thermal Processing", presented at the Institute of Food Technology, 28th Annual Meeting, Phila., Pennsylvania, May 19-24, 1968

III Research Grants

(i) K. G. Picha and C. E. Carver
"Project THEMIS Support of Research on Deep Sea Submersibles", $180,000 per year from 1967 to 1971

J. S. Marcus and C. A. Wogrin
"Summer Institute - Man Made World", NSF Grant, $40,000 Summer, 1968

(ii) Chemical Engineering

Eldridge, J. W.
"New Composite Materials via Direct Polymerization on or in Catalyst-Carrying Substrates", Themis Contract, N00014-68-A-0146-4, Sept. 1, 1967 - August 31, 1968, $14,973.

Kirk, R. S.
"Kinetics of Ebullient Bed Reactors", Themis Contract, N00014-68-A-0146-11, Sept. 1, 1967 - August 31, 1968, $13,589.

McAvoy, T. J.
"On-line Process Control Using an Analog Computer", NSF $50,000.

Lenz, R. W.
"Reaction-Induced Crystallization of Polymers", NSF Grant GK1907, October 15, 1967 to October 15, 1969, $46,000.

Lenz, R. W.
"Preparation and Evaluation of New Polymers", Themis Contract N00014-68-A-68-A-0146-4, September 1, 1967 to August 31, 1968, $14,373.

Lenz, R. W.
duPont Summer Research Grant, June -August, 1967, $2,200.

Roblee, L.H.S., Jr.
"Dropwise Condensation Phenomena of Mercury", NONR Contract 3357(02), June 1, 1968 to November 30, 1968, $6,731. It is anticipated that this contract will be extended in November, 1968 to August 1969 and new funds of approximately $8,000 will be awarded.

Vanpee, M.
"Flame Studies of High Energy Fuels and Oxidizers", NSF Grant GK2801, April 15, 1968 - April 15, 1970, $59,500.

Chappelear, D. C. and Lindsey, E. E.
"Deformation and Non-Newtonian Behavior in Suspensions", NSF Grant GK1110 $25,300.

McAvoy, T. J.
"Research Initiation - A New Approach to Solving Partial Differential Equations on an Analog Computer", $10,000.

Roblee, L.H.S., Jr.
"An Infrared Spectroscopic Investigation of Carbon Formation in Flames", NSF Grant GK1209, $11,200.

Roblee, L.H.S., Jr.
"Dropwise Condensation of Steam", ONR Contract NONR3357(02), $26,733.

(iii)Civil Engineering

Carver, C. E.
"Photomicroscopic Investigation of Non-Newtonian Flows", ONR, $12,000/year x 4 years

Carver, C. E.
"Feasibility Study of Pneumatic Breakwater", DOD Themis, $16,000/year

Chajes, A. and Miller, M. M.
"Non-linear Behavior of Hull Structures", DOD Themis, $8,500/year

Dzialo, F. J.
"Impact Loading of Submarine Hulls", DOD Themis, $9,200/year

Bemben, S. M.
"An Investigation for the Establishment of Design Criteria for Underwater Anchorages", DOD Themis, $9,000/year

Chajes, A. J., Dzialo, F. J., White, M. P.
"Influence of Ship Mobility on the Stresses Produced by Nuclear Blast", DOD-Navy, $20,000/year x 2 years

Archer, R. R.
"Non-linear Statics and Dynamics of Thin Elastic Shells", NSF, $16,200 for eight months

Feng, T. H.
"Water Quality Engineering", USPHS, $22,200/year x 4 years

Skrinde, R. T.
"Infrared Spectrophotometer for Environmental Engineering Research on Drinking Water", USPHS, $2500. for nine months

Feng, T. H.
"Water Quality and Quantity", FWPCA, $38,800/year x 5 years

Adrian, D. D. and Nebiker, J. H.
"Source Control of Water Treatment Waste Solids", FWPCA, $33,226/year for three years

Feng, T. H.
"Effects of Chemical Impurities in Water on Disinfection by Halogens', Army Medical Research and Development Command, $33,800/year x 2 years

Feng, T. H.
" Control of Benthic Deposits in Lakes", Mass. WRRC, $24,600/year x 3 yrs.

Harris, D. B.
"Mechanics of Fluid Transfer in Vegetation", Mass. WRRC, $6,000/yr x 2 yrs.

Higgins, G. R.
"Hydrological Studies in Massachusetts", Mass. WRRC, $5,000/yr x 6 yrs.

Bemben, S. M.
"Influence of Lateral Restraints on Compressibility of a Soil", UMass Faculty Research, $720 for 1 1/2 years

Skrinde, R. T. and Kuzminski, L. N.
"Use of Heat to Improve Wastewater Treatment", UMass Faculty Research, $750 for 4 1/2 months

Skrinde, R. T. and Kuzminski, L. N.
"Removal of Toxic Pesticides by Reverse Osmosis Water Treatment", UMass Faculty Research, $1,000 for one year

At least two grants from the Department of Health, Education and Welfare to the Environmental Engineering group are being held up at the time of this writing because of the freeze on HEW funds.

(iv) Electrical Engineering (Including Equipment Grants)

Hutchinson, C. E.
"Optimum Estimation of System States", NSF Grant GK-810, $17,800 from June 1966 to June 1968 (Support for one graduate student)

Hutchinson, C. E. and Monopoli, R. V.
"Control and Estimation in Systems with Unknown Parameter Variations", NASA Grant NGR 22-010-012, $27,558 from September 1967 to August 1968 (support for three graduate students)

Hutchinson, C. E. and Monopoli, R. V.
"Pulse Frequency Modulated Control Systems", NASA Grant NGR 22-010-018 extended from February 1968 to February 1969 and supplemented with $15,000. (support for two graduate students)

Hutchinson, C. E. and Monopoli, R. V.
"Inertial Navigation for Deep Sea Submersibles", DOD Themis N00014-68 -A-0146-6, $7,000. from September 1, 1967 to September 1, 1968 (support for two graduate students)

Monopoli, R. V.
"Optimum Control System Design", NSF Grant GK-817, $9,300, extended from September 1967 to February 1, 1968, no additional Funds. (support for one graduate student)

Sheckels, G. D. (R. E. McIntosh and I. B. Thomas)
"An Information Transmission Study", NASA Contract NAS-12-606,$30,000. from December 4, 1967 to December 4, 1968.(support for two grad. stud.)

Edwards, F. H.
"Switching Circuits Instructional Scientific Equipment Grant", NSF Grant No. GY-4956, $8,900, matching funds, from July 1, 1968 to May 31, 1970

McIntosh, R. E.
"Microwave Instructional Scientific Equipment Grant", NSF Grant GY-4957, $17,000, matching funds from July 1, 1968 to May 31, 1970

(v) Industrial Engineering - None

(vi) Mechanical and Aerospace Engineering

Boothroyd, Geoffrey
Research Grant from General Electric, $5,000. for one year

Boothroyd, Geoffrey
"Orienting Devices for Vibratory Bowl Feeders", NSF Grant GK-2230, $35,900. for two years

Cromack, Duane E.
"Aerodynamic Simulation Tests for Marine Vehicle Components", DOD Themis, $14,517. for one year

Fillo, John A.
"Boundary Layer Effects on MHD Flows", NSF, $15,000. for 18 months

Fillo, John A.
"Development of a Moment Method to Solve the Three-Dimensional Boundary Layer Equations", NASA, $8,505. for one year

Fillo, John A.
"Aerodynamic Simulation Tests for Marine Vehicle Components", DOD Themis, $11,700. for one year

Murthy, S. N. B.
"On the Optimization of Nozzle Shape with Viscous Flow", Aerospace Research Lab., Wright Patterson Air Force Base, Ohio, $27,378. for three years

Murthy, S. N. B.
"Streaming of Water by Inter-Action with Magnetically Accelerated Colloids", DOD Project Themis, $19,085. for one year

Nash, William A.
"Response of Structures to Random Noise", Air Force Office of Scientific Research, $30,752. for two years

Nelson, Carl W.
"Measurement of the Activation Volume for Metallic Interface Relaxation Processes", NSF, $27,270. for two years

Ritter, John E., Jr.
"Development of a Two Term Sequence of Materials Courses for Mechanical Engineering Students", NSF, $43,600. for two years

Ritter, John E., Jr.
"Static and Dynamic Fatigue of Pristine Glass", DOD Project Themis, $8,851., for one year

Zahradnik, John W.
"Heat Exchange Analysis and Design for Environmental Control Chambers for Oyster Propagation", Olin Matheson Summer Research Grant, Amount, $1,250. for three months

Zahradnik, John W
"Oyster Propagation in Packed Towers", Faculty Research Grant K54-681 $500. for three months

IV Consulting and Other Professional Activities

(i) Dean's Office

K. G. Picha
Consultant NSF Division of Institutional Programs, made site visits on University Science Development and Departmental Development

ECPD Evaluation Visits

Chairman, ASEE Subcommittee on Relations with the Office of Education

ASME Committees; 1) Fluid Mechanics and 2) Heat Transfer Education

ASEE Committee on Relations with Federal Government

ASEE Curtis McGraw Research Award Committee

Governor's Committee on Traffic Safety

Chairman, Panel on Research and Education, Governor's Conference, "Massachusetts Stake in the Oceans"

E. E. Lindsey
Engineering Research Council Committee on Research and Graduate Studies

AIChE Equipment Test Procedures Committee

Massachusetts Society of Professional Engineers

Student Professional Development Committee

J. S. Marcus
Chairman of a committee working with New England Universities to establish a cooperative program with the AEC

H. D. Segool
Governor's Advisory Committee on Science and Technology

Chairman, GACSAT Subcommittee on Federal Support Programs

GACSAT Subcommittee on Industrial Conversion

GACSAT Delegate to ad hoc committee concerned with Haystack facility of Lincoln Laboratories

Executive Committee of the New England Technical Services Board

(ii) Chemical Engineering

Lenz, R. W.
"Introduction to Polymerization", two lectures presented as part of short course on Advances in Polymer Science and Engineering at Wayne State University, April 1968

Lenz, R. W.
" Applied Polymer Science", 5-day short course sponsored by Engineering and Physical Sciences Extension, University of California, Los Angeles, June 1968

Lenz, R. W.
Esso Research and Engineering Co., Baytown, Texas

Fabric Research Laboratories, Dedham, Massachusetts

Collaborative Research Laboratory, Waltham, Massachusetts

Member and Chairman-elect Lectureship Committee of the Fiber Society

Chairman, Publications Committee, Polymer Division, ACS

Lenz, R. W.

Editor, Polymer Preprints and responsible for acceptance of papers organization of the General Papers Sessions of the Polymer Division at national ACS meetings

Member, Editorial Advisory Board, "Macromolecules"

Member, Advisory Committee, University of California Extension

Alternate Councilor, Connecticut Valley Section, A. C. S.

Roblee, L. H. S., Jr.

"Transport Phenomena" 12 hour short course (6 weeks, 2 hours per week) given for Western Massachusetts Section of AIChE

Vanpee, Marcel
Consultant, Thiokol Chemical Corporation, Danville, New Jersey

Cashin, K. D.
AIChE Equipment Testing Procedures Committee

ASEE Energy Conversion Committee

Eldridge, J. W.
AIChE Professional Development Committee

AIChE, Western Massachusetts, Section Director

Short, W. L.
AIChE, National Program Committee, Thermodynamics

AIChE, Inorganic Chemicals

(iii)Civil Engineering

Adrian, Donald Dean
Subcommittee on Sludge Dewatering, Water Pollution Control Federation

Program Committee, Western Massachusetts Branch ASCE

Archer, Robert R.
Publication Committee, Division of Applied Mechanics ASME

Bemben, Stanley M.
Secretary, Massachusetts Section ASCE

Carver, Charles E., Jr.
Subcommittee on Oceanographic Engineering, Secretary, ASEE

Task Committee on Non-Newtonian Flows (Chairman), Fluid Dynamics Committee, Engineering Mechanics Division of ASCE

Technical Council on Oceanographic Engineering ASCE

ECPD ad hoc Visitors Committee, ASCE

Chajes, Alexander
Committee on Compression Members, Structural Division ASCE

Feng, Tsuan H.
Standard Methods Committee, Water Pollution Control Federation

Research Committee, Water Pollution Control Federation

Grow, Thomas A.
President, Western Massachusetts Branch ASCE

Harris, Denton B. Harris
New England District Council ASTM

Institutional Representative ASTM

Kuzminski, Lawrence N.
Admissions Committee, Sigma Xi

Miller, Melton M., Jr.
Subcommittee on Model Analysis, Engineering Mechanics Division ASCE

Nebiker, John H.
Subcommittee on Sludge Dewatering, Water Pollution Control Federation

Program Committee, Western Massachusetts Branch ASCE

Skrinde, Rolf T.
Workshop Committee on Analog Computers, American Association of Professors in Sanitary Engineering

Research Committee, Water Pollution Control Federation

White, Merit P.
Committee on Engineering Education (Chairman), American Society of Civil Engineers

Committee on Mechanical Properties of Materials, Engineering Mechanics Division ASCE

Advisory Board, Engineering Mechanics Division ASCE

White, Merit P.
Advisory Committee on Civil Defense, National Academy of Sciences

Panel on Solid Earth Geophysics and Earthquake Engineering, ESSA Advisory Committee, National Academy of Sciences

Ad Hoc Committee on Dynamic Shock Analysis, U. S. Navy

STUDY INSTITUTES, Civil Engineering

Adrian, Donald Dean
Water Pollution Control, Manhattan College, New York, New York

Feng, Tsuan H.
Advanced Topics in Theory and Practice of Sanitary Chemistry, Harvard

Grow, Thomas A.
NSF Systems Engineering Institute, University of Missouri at Rolla, Mo.

Hendrickson, Karl N.
Fluvial Geomorphology, Colorado State University, Fort Collins

Higgins, George R.
NSF Institute on Water Resources Engineering, New Mexico State Univ.

Nebiker, John H.
Water Pollution Control, Manhattan College, New York

Technical Seminar on Advanced Waste Treatment, Federal Water Pollution Control Administration, Boston

White, Merit P.
Appointed to grade of Fellow, American Society of Mechanical Engineers

(iv) Electrical Engineering

Hutchinson, C. E.
Intermittent consulting for Analytical Sciences Corporation, Winchester

Sheckels, G. D.
Intermittent consulting for Holyoke Water Power Company, Holyoke

(v) Industrial Engineering

Kaminsky, Frank
Treasurer, Lower Connecticut Valley Section, Operations Research Society of American

Rubel, R. A.
Organized relationship between Department of Industrial Engineering and the Massachusetts Hospital Association

Trueswell, R. W.
National Representative of AIIE to the Junior Engineering Technical Societies

National Vice President of Alpha Pi Mu

Member, Board of Directors of Springfield Chapter of the AIIE

Consultant to NASA Electronics Research Lab, Cambridge, on information searching behavior of scientists

(vi) Mechanical and Aerospace Engineering

Bates, Maurice E.
Member of the Student Development Committee of ECPD

Boothroyd, Geoffrey
Member of the ASME Standards Committee B94, TC3, "Basic Nomenclature of Cutting Tools"

Consultant: Greenfield Tap and Die Company, Greenfield, Massachusetts

Cromack, Duane E.
Invited Speaker at the Instrument Society of America, Western Massachusetts Chapter, January 17, 1968. Topic - "Supersonic Gas Flow with Demomstration of Supersonic Wind Tunnel"

Day, Robert W.
Faculty Advisor of AIAA

Attended Hybrid Computer Course

Dittfach, John H.
Attended Strain Gage Techniques Workshop for 2 weeks at MIT, July 5-19,'67

Attended Acoustic Instruments Workshop at Bjuel and Kjer Instruments for 4 days, August 21-24, 1967

Fillo, John A.
Attended a short course on Continuum Mechanics, August, 1967 VPI, Blacksburg, Virginia

Chairman of the Sigma Xi Research Award Committee

Murthy, S. N. B.
Seminar to be given at the Ordnance research Laboratories, Penn State University, University Park, Pennsylvania on May 23, 1968

Nash, William A.
Editor-in-Chief of "International Journal of Non-Linear Mechanics", a quarterly

Associate Editor, Applied Mechanics Reviews, a monthly

"Sponsor" of the Plates and Shells Section of the Applied Mechanics Division of ASME

Seminar speaker, the University of Iowa, April 25th, "Dynamic Buckling of Spherical Shells"

Seminar speaker, South Dakota State University, April 23rd, "Structural Mechanics of Deep Submersibles"

Member, "Translations Panel" of the Applied Mechanics Division of ASME

Proposal reviewer for National Science Foundation and Army Research Office

Recipient of a U. S. National Academy of Science lectureship grant to lecture in Roumania

O'Byrne, Joseph M.
ASEE/NASA Summer Faculty Fellow, George C. Marshall Space Flight Center, Huntsville, Alabama, summer 1967

Engineer, Propulsion and Vehicle Engineering Laboratory, Thermodynamic Branch, George C. Marshall Space Flight Center, Huntsville, Alabama, summer 1968

Chairman, Public Affairs Committee, Western Massachusetts Section, American Society of Mechanical Engineers

Poli, Corrado R.
"Advanced Dynamics -- A New Approach", accepted for publication in the Bulletin of Mechanical Engineering Education

Reviewed, "Symposium on Passive Gravity-Gradient Stabilization" NASA SP-107, for Applied Mechanics Reviews, September 1967

Ritter, John E., Jr.
Presented the three hour Seminar, "Glass-Material for Deep-Sea Submersible Vehicle", as part of the Themis Program

Member of the Young Engineering Training Society Committee of ASEE (New England Section), this Committee was responsible for planning the "Institute on Effective Teaching" held in Boston, April 22-23, 1968

Zahradnik, John W.
Chairman of the Food Engineerng Division of the American Society of Agricultural Engineers

Massachusetts Alternate Representative to the N. E. Marine Resources Information Program

Member of the ASME Food Machinery Committee

Field Seminar - November 17th at the site of the Wareham River Oyster Propagation Project

(vii)Basic Engineering

Kroner, Klaus
Chairman, Education Relations Committee
Chairman, Publications Committee, Engineering Graphics Division ASEE

Umholtz, F. G.
Consultant, Russell Harrington Company, Delta Castings, Gleason Gear, Perkins Gear and Machine Company, and Dotco Tool Company

A N N U A L R E P O R T

School of Home Economics
University of Massachusetts

July 1, 1967 - June 30, 1968.

Submitted by: Marion A. Niederpruem

Marion A. Niederpruem, Dean

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I. APPROPRIATIONS

1965-66	$ 27,635.00
1966-67	36,653.00
1967-68	34,350.00

II. PERSONNEL

RANK	Sept. 1965	Sept. 1966	Sept. 1967
Professors (including School Head)	2	2	2
Professors "A"	1 (12% time)	4 (50% time)	4
Associate Professors	4	4	4
Associate Professors"A:	4	7 (2 10% time)	7
Assistant Professors	6 (1 25%)	6	6
Assistant Professors"A"	-	1	1
Instructors	2	2	2
Lecturers (part time)	3	4	7
	22	30	33

FACULTY ON LEAVE

Harriet J. Wright - Sabbatical.

APPOINTMENTS, PROMOTIONS & MERIT INCREASES, ETC.

Merit Increases	Effective Date
Dr. Mark H. Bert	Feb.4,1967
Mrs. Ruth C. Boicourt	"
Gladys M. Cook	"
Catharine C. Crow	"
Verda M. Dale	"
Dorothy Davis	"
Virginia Davis	"
Winifred I. Eastwood	"
Sarah L. Hawes	"
Edward K. Knapp	"
Dr. Mary E. Lojkin	"
Marjorie M. Merchant	"
Dr. Ellis G. Olim	"
Herbert S. Paston	"
Rachel (Hanson) Roblee	"
Dr. Margaret Varma	"
Helen R. Vaznaian	"

. RESIGNATIONS

Dr. Elwood F. Reber

Mrs. Rachel (Hanson) Roblee

Dr. Margaret Varma

. RETIREMENTS

Mrs. Gladys M. Cook

Barbara Higgins

. TERMINATION

Dr. A. Raymond Cellura

UNIVERSITY OF MASSACHUSETTS
SCHOOL OF HOME ECONOMICS

ORGANIZATION PATTERN
1967-68

TEXTILES, CLOTHING & ENVIRONMENTAL ARTS

Head -
Catharine Crow
Virginia Davis
Sarah L. Hawes, Department Representative
Mrs. Rosa S. Johnston
Herbert S. Paston
Mrs. Rachel French
Mrs. Pamela Purdy
Mrs. Rachel Roblee

NUTRITION AND FOOD

Head - Dr. Elwood F. Reber
Dr. Mark H. Bert
Mrs. Ruth C. Boicourt
Mrs. Gladys M. Cook
Dorothy Davis
Dr. Mary E. Lojkin
Mrs. Jane F. McCullough
Dr. Elizabeth M. Rust
Harriet J. Wright

HUMAN DEVELOPMENT

Head -
Joseph D. Burroughs
Dr. A. Raymond Cellura
Dr. Ellis G. Olim, Department Representative
Dr. Margaret Varma

Nursery School Teachers

Mrs. Helen F. Harvey
Mrs. Karen I. Meyer
Mrs. Anna S. Russell
Mrs. Ruth G. Smith

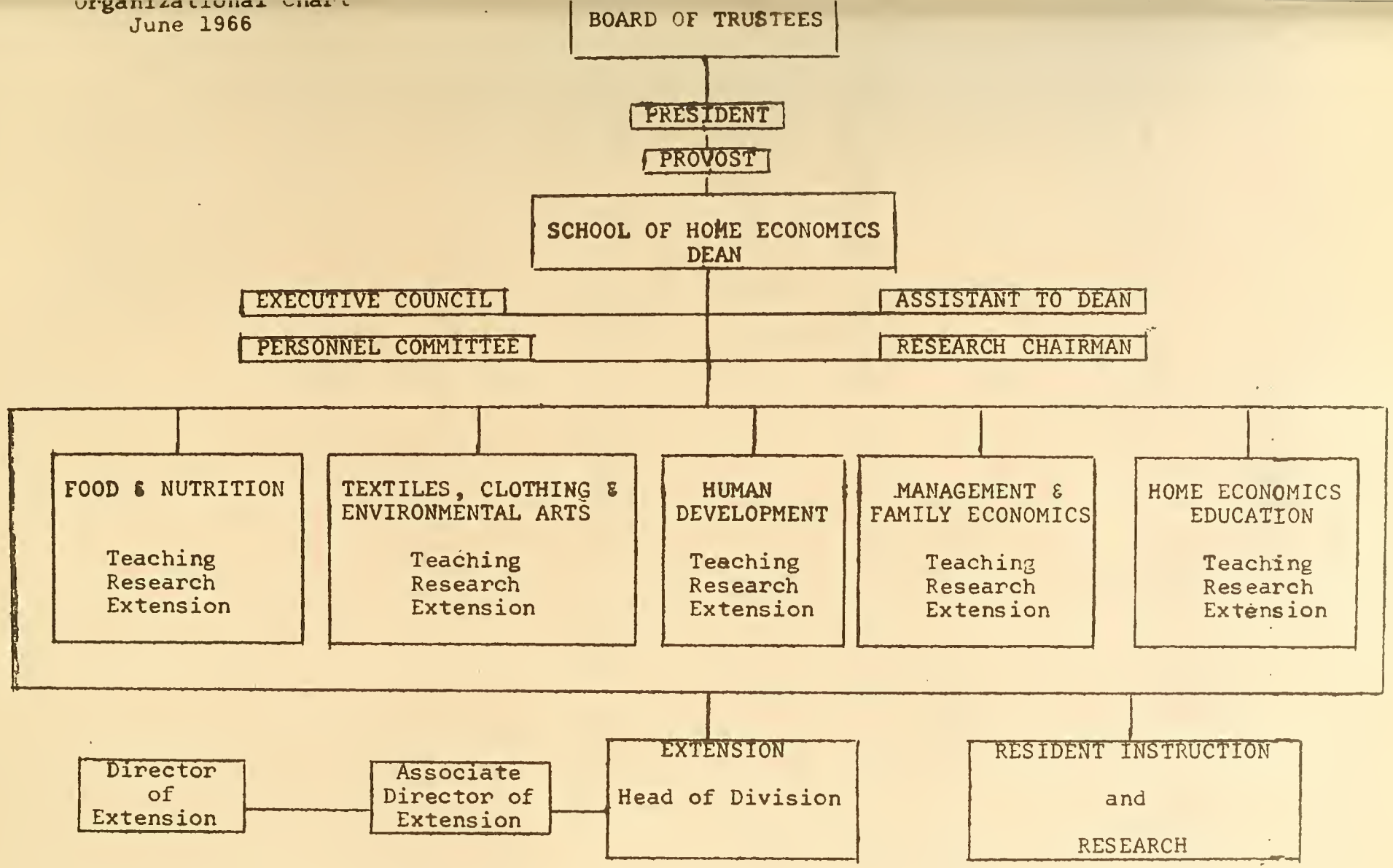
MANAGEMENT & FAMILY ECONOMICS

Head - Verda M. Dale
Barbara Higgins
Marjorie M. Merchant
Edward K. Knapp

HOME ECONOMICS EDUCATION

Head - Helen R. Vaznaian
Winifred Eastwood
Marjorie F. Sullivan

Organizational Chart
June 1966



IV. STUDENTS

	Sept. 1965	Sept. 1966	Sept. 1967
a. Number of majors, undergrad.	289	387	500
Number of majors, graduate	17	26	34

	1965		1966		1967	
	1st	2nd	1st	2nd	1st	2nd
b. No. students taught each sem. (undergrad. & graduate)	861	783	1135	1312	1376	1567
No. of non-majors	246	266	299	411	317	418
No. of courses offered	29	25	38	45	43	51

c. Current data on enrollment figures -- see pages 7 and 8.

SCHOOL OF HOME ECONOMICS

ENROLLMENT BY MAJORS

CHILD DEVELOPMENT

Class of 1968	-	34
Class of 1969	-	34
Class of 1970	-	45
Class of 1971	-	21
Non-Classified	-	1
		135

DIETETICS AND INSTITUTIONAL ADMINISTRATION

Class of 1968	-	5
Class of 1969	-	13
Class of 1970	-	8
Class of 1971	-	14
Non-Classified	-	1
		41

NUTRITION AND FOODS IN BUSINESS

Class of 1968	-	2
Class of 1969	-	3
Class of 1970	-	4
Class of 1971	-	5
		14

HOME ECONOMICS EDUCATION

Class of 1968	-	16
Class of 1969	-	29
Class of 1970	-	21
Class of 1971	-	24
Non-Classified	-	2
		92

FASHION MERCHANDISING

Class of 1968	-	31
Class of 1969	-	44
Class of 1970	-	55
Class of 1971	-	74
		204

ENROLLMENT BY MAJORS

Child Development	-	135
Dietetics and Institutional Administration	-	41
Nutrition & Foods in Business	-	14
Home Economics Education	-	92
Textiles, Clothing & Environmental Arts	-	204
TOTAL ENROLLMENT		486

4/8/68:kl

SCHOOL OF HOME ECONOMICS UNDERGRADUATE ENROLLMENT
FALL 1961 -- FALL 1967

all Semester 1961-62

Freshman		- 26
Sophomore		- 34
Junior		- 26
Senior		- 30
	Total	116

all Semester 1962-63

Freshman		- 37
Sophomore		- 32
Junior		- 40
Senior		- 28
	Total	137

all Semester 1963-64

Freshman		- 62
Sophomore		- 44
Junior		- 35
Senior		- 36
	Total	177

all Semester 1964-65

Freshman		- 74
Sophomore		- 63
Junior		- 40
Senior		- 33
Non-Classified		- 3
	Total	213

all Semester 1965-66

Freshman		-101
Sophomore		- 94
Junior		- 53
Senior		- 36
Non-Classified		- 5
	Total	289

all Semester 1966-67

Freshman		-114
Sophomore		-111
Junior		-109
Senior		- 49
Non-Classified		- 4
	Total	387

all Semester 1967-68

Freshman		-134
Sophomore		-129
Junior		-135
Senior		- 99
Non-Classified		- 3
	Total	500

ercentage of Increase - Fall 1961 to Fall 1967 ---------- 331.03%

/15/68:h

V. PROFESSIONAL ACTIVITIES
VI. MAJOR ACCOMPLISHMENTS
VII. SPECIAL PROJECTS
VIII. FUTURE PLANS AND NEEDS

These topics have been considered in each of the department reports which follow. However, some items which do not appear and other items which need to be emphasized, are summarized herewith.

Critical Personnel Situations

When the Dean resigned in January 1968, certain positions were frozen which had the effect of stopping the development of the School and certain departments:-

Permission to replace Dr. Reber's position, Head of the Department of Nutrition and Food, was denied and the department faces the academic year, 1968-69, without a capable leader.

Permission to replace Dr. Cellura's position, Head of the Department of Human Development, was denied and Dr. Olim was assigned for 1967-68 as Department Representative with limited administrative duties. The Department faces lack of strong leadership in the academic year, 1968-69.

Permission to replace Miss Barbara Higgins, Management and Family Economics-Extension, was denied. This has weakened considerably the program in this field of Extension and has curtailed the department's development.

In place of Mrs. Pamela Purdy and Mrs. Rachel French (temporary), the Textiles, Clothing and Environmental Arts Department and the Dean wished to bring in a well qualified, experienced person to teach courses in Interior Design, History of Decorative Arts, History of Costume, and direct graduate theses in the realm of historical research related to clothing, textiles and art. Such a person was found - Dr. Robert Forsyth, Associate Professor of Related Art, College of Home Economics, University of Minnesota. For the past ten years he has been teaching in the Related Arts Department of the College of Home Economics at the University of Minnesota, exactly the same courses that he would have taught here. Permission to appoint this man was denied.

This department faces the problem of having Mrs. Pamela Purdy and Miss Eleanor Randall, temporary people, teach some of the Environmental Arts courses in order to "cover" the courses that must be

taught during the academic year 1968. The fact that a well qualified permanent person could not be appointed for 1968-69 means that the department is not adequately staffed in this field.

Permission to appoint Dr. Ruth Gates to the TCEA Department was denied despite the fact that the department and the Dean strongly supported this candidate. Dr. Gates was well qualified to work at the graduate level and to develop a graduate program in the area of Clothing and Textiles. This has curtailed development of graduate work in this field.

During spring term, the three new positions that were given to the School of Home Economics were taken away. One was to go to the Nutrition and Food Department, the second was to go to the Human Development Department, and the third to the Textiles, Clothing and Environmental Arts Department. The effect of this is obvious -- the growth and development of these departments at both the undergraduate and graduate levels is at a standstill.

In order to offer all the required courses in the various programs, some extension personnel taught courses during the year:

J. Burroughs - two courses, spring term.
V. Dale - one course, fall; two courses, spring term.
V. Davis - one course, fall and spring terms.
R. Johnston - one course, spring term.
M. Merchant - one course, spring term.

The initial purposes for extension personnel to teach at the undergraduate level were to strengthen the caliber of the teaching program and to provide enough teachers for the required courses. An equally as important factor for this development was the directive the Provost issued to the Dean that all extension personnel should teach at least one course a year. If in the future, extension personnel do no teaching, then extra faculty will have to be brought in in order to "cover" the required courses.

The personnel situation in the School of Home Economics is critical because there is inadequate leadership in three departments and we do not have enough teachers to take care of the number of students in our required courses and those who wish to elect our courses. We have had to limit the number of courses and sections we offered and the number of students who took courses. Development of graduate work has not progressed because of lack of graduate faculty.

Graduate Work in Home Economics

In the State of Massachusetts we have a great need for people to obtain a master's degree in home economics with concentration in one of five subject matter areas. More and more home economics teachers and school administrators are becoming aware of the need for graduate studies in home economics. Teachers are applying for course work at the graduate level as well as expressing the desire to become involved in degree programs at our School. We have successfully offered courses in Home Economics Education in Pittsfield, Arlington and Boston. These courses supplement our regular summer school offerings. The students taking these courses already have degrees - some have master's. Others are interested in beginning a master's degree program at the University.

Throughout the state there is a real need to offer graduate courses in the various areas of the five subject matter fields. By so doing, we will make a real educational contribution to the state.

Our graduate course work and programs in home economics on the Amherst campus continues to be evaluated and strengthened. As the departments develop, they will be able to offer greater depth and breadth of subject matter and concentration in a field. This past year, the students that have completed their master's degree in Home Economics are as follows:

Home Economics	
Human Development	-3
Home Economics Education	-2
Nutrition and Food	-3

Laboratory Classrooms and Office Situation

The School of Home Economics, due to an increase in enrollment and development, has had to deny people courses and keep enrollment in courses limited to the laboratory space and faculty that were available. At the present time there is need for an additional Home Economics Education laboratory and additional Home Management laboratory facilities. More laboratory space is needed for clothing construction and environmental arts. Additional laboratory facilities are needed for nutrition class use and research activities. The complex for the nursery school laboratory is inadequate and more space is needed. We do not have adequate space to accommodate our graduate students who are working on assistantships and research. Office and work space is not available. We also have no space in Skinner Hall for housing new faculty. An addition to Skinner Hall to accommodate our present needs and future growth is

urgently needed. A request for an addition to Skinner Hall was made to the Master Planning Committee in May 1968.

Five-Year Developmental Plans

The departments were unable to make any progress on their Five-Year Developmental Plans (submitted 1965-66) due to the personnel situation delineated previously and due to lack of sufficient budget to make any improvements in research and teaching facilities.

Continuing Education

The School is in it's initial stages of development in regard to making a significant educational contribution to the Home Economics teachers for the State. Fall 1967, Miss Helen Vaznaian taught HEEd 710, a seminar in Home Economics Education in Arlington. This was a very successful attempt to make a contribution to the teachers in eastern Massachusetts. This will be followed by another course in Home Economics Education in Arlington, Fall 1968. We should be offering courses in all subject matter areas of Home Economics at the graduate level for Home Economics teachers throughout the state.

Critical Need for Additional Clerical Assistance

The situation of support staff for the departments is extremely critical. We do not have sufficient clerical help to write up proposals for research grants, to prepare materials for course work, to help in the development of the departments, and to carry on the operational and administrative activities of the departments and School. All the secretaries in the School of Home Economics have been realigned as to their work assignments for greater efficiency but this has not relieved the shortage of help. We must have additional positions for secretaries to help us carry on our work. We are not able to function effectively under the present setup.

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NUTRITION AND FOOD DEPARTMENT

Annual Report (5-8) for July 1, 1967-June 30, 1968.

Submitted by: Dr. Elwood F. Reber, Head.

FACULTY PUBLICATIONS, RESEARCH GRANTS, RESEARCH PROJECTS AND OTHER PROFESSIONAL ACTIVITIES.

There have been no new research grants or research projects in the department this past year. One research contract in operation was the Atomic Energy Commission Contract on the "Evaluation of radiation-pasteurization of clams and marine products." Principal investigator: Elwood F. Reber. A Graduate School faculty research grant on the "Enhancement of the nutritive value of unicellular algae", was continued. Principal investigator: Dr. Mark H. Bert. The research grant from the National Health Institute titled "Tryptophan metabolism and requirement for pregnancy" was not renewed for the past year. However, the NIH permitted continuation of the grant without additional funds. Principal investigator: Dr. Mary E. Lojkin.

Publications

Bert, M.H., B.D. Punekar and E.F. Reber. Effects of radiation, cooking, and methionine supplementation on protein quality and fat deposition in liver. Fed. Proc., 27, 725, 1968.

Yoo, W.H., F. Fu and M.E. Lojkin. Tryptophan metabolism and requirement for pregnancy of the rat as affected by amino acid supplementations. Fed. Proc., 27: 252, 1968.

Other Professional Activities

Miss Dorothy Davis completed a course in Bacteriology during the summer of 1967 at the University of Maine. Miss Davis was accepted as a full-member of the American Dietetic Association.

Miss Harriet Wright is spending a sabbatical leave at Columbia University, School of Public Health and Administrative Medicine where she is enrolled in the Master's of Public Health Program.

MAJOR ACCOMPLISHMENTS DURING FISCAL 1967-68.

The Department taught a new course this year titled NF 672 - Quantity Food Purchasing. Taught by Mrs. Jane McCullough and Dr. Elizabeth Rust.

SPECIAL PROJECTS OR PROGRAMS.

The staff of the Nutrition and Food Department participated in several radio programs dealing with nutrition and food over station WFCR-FM.

Dr. Bart participated in the University Honors Program this past year.

FUTURE PLANS AND NEEDS.

Due to the uncertainty of filling staff positions in the Department, it is quite difficult to describe the future plans and needs. An outstanding need of the Department is to find replacements for Mrs. Cook, who is retiring, and Dr. Reber, who has resigned. The major limitation in acquiring new staff and in holding the present staff is the great lack of adequate facilities and equipment. During the past four years when Dr. Reber was Head of the Department, requests were made for facilities and equipment. Well-qualified personnel were brought to the campus for interview. However, these requests and personnel recommendations were not approved by the administration.

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HOME ECONOMICS EDUCATION DEPARTMENT

Annual Report (5-8) for July 1, 1967-June 30, 1968.

Submitted by: Helen R. Vaznaian, Head.

PROFESSIONAL ACTIVITIES

Marjorie F. Sullivan

University of Connecticut, Department of Child Development and Family Relations: Conference, "Counseling Couples with Sexual Problems," May 9-10,1968. Dr. Eleanor Luckey and Dr. Fred Humphrey.

Massachusetts Home Economics Association State Meeting, Northfield, Mass., October 1967.

Helen R. Vaznaian

Educational Policies Commission of the New England A.S.C.D. Three planning sessions during the months of January, March and May.

The New England Team of the Center for the Study of Instruction, National Education Association Conference: "Who Changes the Curriculum"? Wayfarer Motel, Bedford, N.H., April 1968.

North Atlantic Regional Conference of Land Grant Institutions, March 1968, Hotel Statler, N.Y. Focus upon the McGrath Study and recommendations by the Committee on Accreditation, AHEA.

Marjorie F. Sullivan and Helen R. Vaznaian

New England Association for Supervision and Curriculum Development: The Pitkin Institute, Keene, N.H. Dr. Parker (McLuhan Associate) and C. Bartlett Hayes, "Understanding Media." January 1968.

Massachusetts Association for Supervision and Curriculum Development: "A Critical Analysis of Supervisim," Dean Dwight Allen, Framingham Motor Lodge, Framingham, Mass.; May 1968.

Western Massachusetts Home Economics Association Meeting, University of Massachusetts, April 1968.

SPEAKING ENGAGEMENTS

Helen R. Vaznaian

Worcester, Mass. County Extension Leaders Spring Conference. "The Psychology of Learning," S--R bond to the present.

Sommerville, Mass. Teachers of Home Economics at the Secondary School Level. "The Challenge and Changing Mission of Home Economics: Implications for Secondary School Teaching."

CONSULTANT SERVICES

Marjorie F. Sullivan

Hopkins Academy, Hadley, Mass. Revision of Secondary School Curriculum in Home Economics.

Pioneer Valley Regional High School, Northfield, Mass. Materials and methods for sex education within the context of Family Life Education in the secondary schools.

Helen R. Vaznaian

Ford Foundation, Bennington, Vt.; Secondary School Project, Dr. John Herlihy, Director.

Newton Public Schools, Newton, Mass. Dr. Van Seasholes, Principal, Day Junior High School, Newton. Dr. J. Bernard Everett, Asst. Superintendent and Director of Instruction.

Amherst Regional High School. Advisory Council for the Establishment of the Child Study Laboratory, Dept. of Home Economics Education.

Holliston Public School System, Holliston, Mass. Design of facilities and curriculum for the new Holliston Senior High School.

Massachusetts State Department of Education: Technical-Vocational Education, including Distributive Education. Dr. Carl Schaefer, Dr. Kaufman.

Massachusetts State Department of Education: Miss Patricia Allen, Secondary School Supervisor.

RADIO PROGRAMS

Conversation - WFCR - moderated by Miss Virginia Davis. "Technical-Vocational Education Revisited," Dean Dwight Allen, Dr. John O'Neill, Associate Commissioner of Education, Mass. State Dept., and Helen R. Vaznaian, Head, Home Economics Education.

MAJOR ACCOMPLISHMENTS

Marjorie F. Sullivan

(Provision of leadership for upgrading the professional preparation of Home Economics Educators at the secondary school level through University Extension.)

Westfield State College, Westfield, Mass. "Curriculum and Methods in Technical-Vocational Education," 1-week In-Service Program, Mass. State Dept. of Education.

Reactivation of the course, Home Economics Education 681, Adult Education in Home Economics, during the Spring 1968 semester. At the end of the course, students at the request of Mrs. Sullivan evaluated the course. One member of the class expressed its value as follows:

> "A hard, long look at education's role has been one of the most valuable experiences in this course. I have come to realize that I have always separated schooling from life and from home. Now I have only begun to realize the importance and implications of education, as well as recognize that it really doesn't end when graduation comes."

Helen R. Vaznaian

(Provision of leadership for upgrading the professional preparation of Home Economics Educators at the secondary school level through University Extension.)

University of Massachusetts/Boston, July 10-28, 1967. Course: 3 credits, "Seminar in Home Economics Education," (HEEd 710). It is interesting to note that four secondary school teachers commuted daily from Hyannis to Boston to take this course.

In-Service program at the request of the Arlington Public School System, Arlington, Mass. Course: "Seminar in Home Economics Education," (HEEd 710) 3 credits, Fall Semester, 1967.

At the request of the cooperating teachers of our student teachers, "Home Economics Education 682, Curriculum and Methods" was offered during the Spring Semester on Wednesday, 4:00 - 6:30 p.m. As a result of this course we have been requested to offer another during Fall 1968, so that they may continue to gain knowledge new to them. Several class members in this course had had no formal course work for seven years or more, the greatest length of time being 27 years. In addition, this group has expressed a desire for a formal "Orientation Session" prior to receiving student teachers in the fall as well as an opportunity for a one-day institute to discuss common concerns.

Each of the above courses has been evaluated by the class members. The results are most gratifying. The evaluations are on file in the office of Helen Vaznaian, Department Head.

Revision of Master of Science Degree Programs in Home Economics Education with provision for greater flexible orientation and concentration in a related content area.

Students receiving Master of Science Degrees with major work in Home Economics Education as of June 1968, are:

Joan Bolton: "A Study of the Dietary Adaptations of 40 Puerto Rican Families in Springfield, Massachusetts."

Patricia A. Fine:

"The Development, Teaching, and Evaluation of the Unit, Dynamics of Fashion, by Two Pilot Groups at Newton South High School, Newton, Massachusetts."

As of September 1, 1968, Norma Rivera, Pamela Belfield, and Helen McGinley will have completed requirements for their Master of Science Degree.

Dr. Nancy Myers, Department of Psychology, and Dr. Robert Jones and Dr. Chenault from the School of Education have served on candidate's committees. We are appreciative of their support and cooperation.

Initiation of Student Internship Program at the graduate level with the cooperation of the School of Education.

Establishment of a Curriculum Laboratory Center in Hampshire House for students in Home Economics Education. While much remains to be done, a beginning has been made.

FUTURE DEVELOPMENT AND DEPARTMENTAL NEEDS.

1. Our graduate program needs to be intensified and expanded, particularly to make possible fulfillment of our responsibility in both Home Economics and Technical Vocational Education. We expect to continue and intensify leadership to the state through University Extension courses, the Massachusetts State Department of Education, and the Massachusetts Home Economics Association as well as contribute significantly to whatever technical-vocational program is developed in the School of Education. Two-hundred and twenty-six million dollars was appropriated for the expansion of the occupational programs related to Home Economics at the secondary school level this year. This sum has been increased to four-hundred and fifty million for the coming academic year.

Attached is copy from the Hampshire Gazette describing one such program to begin at Amherst Regional High School. The seed for this project was sown at the Mass. State Home Economics Association Meeting at Westfield State College by Helen Vaznaian, key speaker on "Technical-Vocational Education: Implications of Research." After the meeting, Miss Vaznaian urged Mrs. Day, teacher of Home Economics, to seek a federal grant for the initiation of a Child Development Course with a Child Study Laboratory. Since that time it has been her pleasure and privilege to serve on the Advisory Council for this program which will be launched September 1968.

Three other programs have been launched as a direct result of our assistance and guidance:

1. The Food Service Program in conjunction with the Harvard-Newton Summer School.

2. The Child Study Laboratory, the Child Development Work-Study Programs at Newton South and Newton High School, plus initiation of Child Development Program at Newton Junior College.

3. The Core-Skill program at Mt. St. Anthony's Comprehensive High School.

Daily Hampshire Gazette — Wednesday, May 15 1968 —

Child Study Laboratory School To Begin Here

AMHERST — In September Amherst Regional High School will admit 16 three and four year-olds. These children will be participants in the first child study laboratory school of its kind in a non-vocational high school in this state.

The office of the superintendent of schools in the town hall has application forms available to any parent interested in enrolling his child in this program. Children must reside in the towns of Amherst, Leverett, Pelham or Shutesbury. They must be born after May 1, 1964, and before Sept. 1, 1965 in order to qualify.

This will be the only opportunity for interested parents to enroll their children. All applications must be received by Friday.

From the list of applications, the Advisory Council will draw by lot the names of those to be admitted to the laboratory school.

The purpose of this project is to adequately prepare high school students for employment by public or private agencies or organizations in the care of young children. This program would combine formal instruction in child care and development along with practical experience in a child study laboratory. The laboratory would be a part of the project and would be operated by the supervising teacher and student assistants on a tentative schedule of three mornings per week. The remaining two mornings could be used for formal instruction.

Students interested in a job in Child Care Services could voluntarily sign up for the program when making their course selections or they may be referred into the program by a guidance counselor. These students should have a genuine interest in children and be pleasant and cooperative. The minimum length of this child development program would be the equivalent of two class periods per day for one year. A second year may be scheduled by those students desiring more depth in child psychology and nursery school management.

Several weeks of orientation would be necessary before the students could assist in the operation of the laboratory. Students would rotate jobs in order to have a variety of experiences. Classroom instruction would be planned to give the student a thorough understanding of children, develop compentencies in taking care of their daily needs, to encourage awareness of safety practices and health needs, and to recognize the value of appropriate play activities. The number of students participating in the program would depend on interest and scheduling flexibility. In a questionaire survey of all the girls in grades 10 through 12, at least 1 3 showed an interest in the program. Eleventh and twelfth grade students will be given preference and it is suggested that they previously have at least one year of home economics training.

Where a student indicates competency in caring for children she will be encouraged to take a part-time job in this field. Upon completion of a year in this program, the student may participate in a work-study program as an assistant to an elementary, kindergarten or nursery school teacher. Conferences will be arranged between employer and home economics teacher to check on the students progress.

Every effort will be made to place those students desiring a position in child care into a job which will make use of her training.

The number of children in the nursery school laboratory would be between 12 and 16. They will be selected by application. An effort will be made to have them represent a cross section of the population. A complete listing of equipment and necessary facilities and estimated costs are enclosed.

Although a child study laboratory is a part of many high schools in other states, this would be the first to be established in a public secondary school in Massachusetts. It would be used as a model and could encourage other schools to start a similar program. Every effort will be made to encourage others to visit the school and to publicize the program.

The most involved and vital part of the program is the changing of a home economics room now used as a sewing laboratory into child study laboratory. This room is away from the main corridor of the school and has a door directly to the outside of the building. A listing of necessary equipment and supplies is included. Guides used in making up this list were "The Child Day-Care Center Worker" by U.S. Department of Health, Education and Welfare, "Preparing For Employment in Child Care Services" by Commonwealth of Penna., visits to Newton Public Schools and Framingham State College to view the nursery school programs, and helpful advice from the director of U. of Mass. nursery school and local nursery school and kindergarten teachers.

This child study laboratory will be large enough to accommodate a maximum of 16 children and will be equipped with facilities for indoor and outdoor play where the students, under the supervision of a professional teacher may:

— guide children during play activities

— supervise children during dressing, rest periods, snack time and toileting

— supervise creative activities such as painting, clay modeling, music, puppetry, etc.

— help children develop desirable habits of caring for clothing and play materials.

Amherst Area

Much remains to be done in the initiation of additional service oriented programs for the secondary and post-secondary levels of technical-vocational education.

Expanding programs create expanding needs in personnel. Will we be able to fulfill our responsibility for preparing teachers for not only the secondary schools, but post-secondary technical-vocational schools, Junior and Community Colleges?

2. Addition to the present staff in Home Economics Education: Currently, the department head and Mrs. Sullivan guide 100 undergraduate majors in Home Economics Education, eight full-time graduate students, conduct several undergraduate and graduate courses, including those for 107 transient graduate students. In addition, both serve on numerous university and school committees. Miss Vaznaian also carries several administrative responsibilities. Such is the nature of our growth during three short years. We wish to continue growing.

An increase in staff will make possible an extremely important dimension currently missing; namely, research activities, as well as enable us to meet more effectively our teaching and state leadership responsibilities.

3. There is a great need for a large multipurpose laboratory which can serve as a Center for Learning in Home Economics Education. Due to the increase in the number of students enrolled in our major, the space (one room) in Hampshire House compensating for the Homestead is now inadequate. It will become a modified curriculum laboratory for individual and small group use prior to student teaching. This year we have scheduled the junior and senior students for evening classes three nights a week so that specialized laboratories would be available for our use (micro teaching) in teacher education. Student evaluations of the course pinpoint the concern:

> "I would have the course meet at not so late an hour. It is very hard to pay attention for 2-1/2 - 3 hours, especially when it means missing dinner every week."

Would it be possible to convert Room 217 in Skinner Hall to a multipurpose laboratory, based upon modifications of the floor plans, submitted with the year-end report, June 1967? We would be happy to make the necessary adaptations.

4. Lastly, as previously indicated, we need the services of a secretary desparately. We are particularly pressed for the preparation of teaching materials for staff and students, for handling of correspondence, etc. Whatever consideration can be given to this matter will be greatly appreciated.

ACKNOWLEDGMENT

I should like to express my personal thanks to Dean Marion A. Niederpruem for the support given to the Department of Home Economics Education. Freedom to innovate has made growth possible.

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HUMAN DEVELOPMENT DEPARTMENT

Annual Report (5-8) for July 1, 1967 - June 30, 1968

Submitted by: Dr. Ellis G. Olim, Department Representative

FACULTY PUBLICATIONS

The following articles have been published by faculty members within the past year:

Olim, Ellis G., et al - Role of Mothers' Language Styles in Mediating Their Preschool Children's Cognitive Development. The School Review, Winter, 1967.

Olim, Ellis G. An abstract of the foregoing was prepared for Sociological Abstracts.

Olim, Ellis G. The Self-Actualizing Person in the Fully Functioning Family: A Humanistic Viewpoint. The Family Coordinator, July 1968.

Varma, Margaret F. The Meaning of Children's Play. Femina, July 1967.

During the year Dr. Olim undertook to write a book for Scott, Forsman Publishing Company on Language and Cognitive Development. Work is in progress.

RESEARCH GRANTS

The following research grants were held by Dr. Olim within the past year:

Faculty Research Grant FR-N11-67(1)
Faculty Research Grant FR-N11-68(2)

OTHER PROFESSIONAL ACTIVITIES

During the year, Professor Burroughs was invited to serve on the board of editors of The Family Coordinator: Journal of Education, Counseling and Services, published by the National Council on Family Relations.

Dr. Varma and Dr. Olim were on the program of the Annual Meeting of the New England Association for the Education of Young Children held in Norton, Massachusetts, April 26 and 27.

Professor Burroughs conducted a highly successful seminar on Sex Education at the University of Massachusetts at Boston during October and the early part of November. The seminar was attended primarily by professionals. As a result of the seminar, Professor Burroughs has been requested to schedule similar seminars next fall in Dukes, Franklin, Middlesex, Norfolk, and Worcester Counties and to schedule a follow-up seminar at the University of Massachusetts at Boston.

The members of the faculty had various consultantships during the year and attended a large number of professional meetings.

MAJOR ACCOMPLISHMENTS DURING THE YEAR

For the first time we obtained official confirmation from Mr. McGrail, Head of Certification for the State Department of Education in Massachusetts, that majors in Child Development will be certified as kindergarten teachers in public schools in the State of Massachusetts upon successful completion of their course work and graduation.

Because the number of Child Development majors has grown to a point where we can no longer handle all of them within the laboratory nursery school, Dr. Varma has worked out an agreement with the Little Red School House of Amherst and the Cloverdale Nursery School of Northampton whereby next year, 24 of our students will get their practice-teaching in one of those two schools. Part of their training, however, will also be in the University of Massachusetts laboratory school. During the academic year, the nursery school has, through a variety of programs and projects, expanded its scope and influence in the University and the Community. Many other departments and schools of the University are sending their students to observe the children and to participate in classroom activities. The Amherst Regional High

School has made extensive observations of the nursery school as a model for planning their own early childhood education program and for setting up their own laboratory nursery school.

On March 9, the nursery school was host for a science workshop for members of the Western Massachusetts Association for the Education of Young Children.

SPECIAL PROJECTS

Dr. Olim has been appointed training coordinator for a head-start orientation program to be held June 24, 25 and 26 at the University of Massachusetts.

FUTURE PLANS AND NEEDS

Two faculty members resigned during the academic year and only one replacement has been appointed. A second potential replacement refused the offer of appointment. Thus, there will be some curtailment in our activities during the coming academic year unless we are fortunate to obtain an increase in faculty.

One of the most urgent needs of the Department of Human Development is to undertake a Ph.D. program. Because human development is an inter-disciplinary pursuit, we could, if permitted, undertake a doctoral program because the facilities for a full-scale Ph.D. program in human development now exist in this University. By drawing on the courses of other departments as well as our own, we could today put together a first rate Ph.D. program. All we lack, technically, is the required number (5) of doctoral faculty members. This technical obstacle could readily be solved by obtaining the consent of the Psychology Department to have their three developmental psychologists hold joint appointments in psychology and human development. This, of course, is not a long-range solution, but it would be sufficient to get us started. It is not a long-range solution because with such a small faculty we could have very few candidates and because the specialization options open to the candidates would be needlessly restricted. In order to be able to offer a wide spectrum of specializations in Human Development, it is necessary to have in the department (possibly with joint appointments in other departments) people who are interested in the biological aspects of development, faculty members who are

interested in the sociological aspects of human development, and faculty who are interested in cross-cultural research.

The laboratory nursery school has developed to a point where it is an excellent school, a model for other schools in the area. However, because of lack of space and test room facilities and equipment, the laboratory school is far from serving its proper function as a research facility. In order to serve this function, as well as to accommodate the growing enrollment of students majoring in human development, the nursery school program should be expanded to six groups of children. This would entail the hiring of new teachers at salaries that would compete favorably with the better nursery schools in the area. It also would entail the purchase of additional equipment and the provision of additional space for research.

The present landscaping of the nursery school is inadequate and even dangerous for young children. The stairway to the upper level playground is badly eroded. Future landscaping should make use of modern materials such as concrete and wooden forms to provide a creative play area for young children.

Finally, the routine administrative arrangements of the department are not satisfactory. Each faculty member has to answer his own telephone and several members share the same telephone. When faculty members are out, their telephones go unattended. It is strongly recommended that all the telephones be hooked up to a central box on the desk of the departmental secretary.

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TEXTILES, CLOTHING AND ENVIRONMENTAL ARTS DEPARTMENT

Annual Report for July 1, 1967 - June 30, 1968

Submitted by: Sarah L. Hawes, Department Representative

FACULTY PUBLICATIONS, RESEARCH GRANTS, RESEARCH PROJECTS, AND OTHER PROFESSIONAL ACTIVITIES.

Professional Activities

Faculty participated in the following meetings, programs and activities:

Crow, Catharine:

Meetings attended:

National Retail Merchants Association, New York City, Jan. 1968.

Other activities:

Faculty Fellow, Orchard Hill Residential College (Emily Dickinson).
Advisor: Iota Gamma Sorority.
Judged: Massachusetts Dairy Queen Contest.
Cooperated in developing a Seminar Course in Creative Display.
School Publicity Committee.

Davis, Virginia

Meetings attended:

Fashion Group Industries Seminar, Sept. 1967, New York City.
Fashion Group Industries Seminar, March 1968, New York City.

Publications:

Journal of Home Economics, 59 (Oct. 1967), p. 676 - 5 Clothing and Textile Abstracts.
"Clothing the Family." F. E. Compton, Div. of Encyclopedia Britannica, Inc., Chicago, 1967 - 26 pp.
"Total Look in Teen Age Fashion." The National 4-H News, Oct. 1967.

Other activities:

State Clothing Review: Annual 4-H Presentation, June 24-27; responsible for organization and presentation, also instituted Clothing Workshops for Boys and Girls in conjunction with annual 4-H conference.

"Conversations" - weekly half-hour radio program presented by School of Home Economics on Five College Radio and four other educational radio stations. Responsible for programing, emcee and coordinator.
Personnel Committee, 1967-68.
Senate Summer School Committee.
Master's Committee for two graduate students.
Senior Honors Committee member.

Roblee, Rachel (Hanson)

Meetings attended:

Eastern Region Conference of College Teachers of Textiles and Clothing, Oct. 1967, Williamsburg, Va.

Other activities:

Attended Summer School, South Dakota (6 credits).
Chairman, Senior Honors Committee.
Chairman, School Faculty Fund Committee.

Hawes, Sarah L.

Meetings attended:

Western Mass. Home Economics Assoc., Oct. 1967, Northfield.
Mass. State Home Economics Meeting, May 1968, Dedham.

Other activities:

Taught Summer Course, U. of Massachusetts (2 weeks) - "Synthetic Fibers - and the Consumer."
Served as Department Representative for TCEA Department on School Executive Council.
School Committees: Undergraduate Curriculum Committee
Scholarship Committee
University Committees: Senate
Committee on Committees
University Affairs Committee
Discipline Board
Committee member for Senior Honors.

Johnston, Rosa S.

Meetings attended:

Mass. Art Education Assoc., Oct. 1967, Williamstown
Mass. Art Education Assoc., April 1968, Boston

Other activities:

Conducted and Coordinated State Wide Art Tour, May 1968.
Chairman, School Personnel Committee, 1967-68.
University Tenure and Grievance Committee.
Master Planning Committee.

Paston, Herbert S.

Meetings attended:

National Art Education Conference, New York City, April 1968.

Other activities:

Chairman, Senior Honors Committee.
Taught Summer School, Columbia University, N.Y.C., 1967.
Conducted Field Trip for Interior Design students, N.Y.C.
Secured Exhibitions for Home Economics Gallery:
  Wall Paper Institute of America
  Scalemandre Museum - Period Textiles
  " " - Modern Textiles
  National Index of Design - American Household Items
Designed Summer School Booklet for School
School Committees: Summer School
Publicity Committee

Coughlin, Mrs. Joan - Visiting Lecturer, taught one course, TCEA 123, Art for Living laboratory during Fall 1967 semester.

Purdy, Mrs. Pamela - Visiting Lecturer, taught three TCEA 123, Art for Living laboratories during Spring 1968 semester.

French, Mrs. Rachel - Visiting Lecturer, taught TCEA 276, History of Decorative Arts (blocked September - November) during Fall 1967 semester.

Randall, Mrs. Margaret - substituted in TCEA 124, 128 and 265, for Miss Rachel Hanson, November - January, Fall semester 1967-68.

Mrs. Rachel (Hanson) Roblee resigned as Instructor effective at end of the 1967-68 academic year.

Mrs. Margaret Randall was appointed as an Assistant Professor to replace Mrs. Roblee; appointment to become effective September 1, 1968.

Dr. Marion A. Niederpruem will become a Professor in the Department, effective September 1, 1968.

MAJOR CONTRIBUTIONS OF DEPARTMENT

The Textiles, Clothing and Environmental Arts Department is involved primarily in the undergraduate teaching program and the extension program. The undergraduate program has an enrollment of 204 students, a very large percent of the total school enrollment of 486 students. The courses offered in 1967-68 increased in number from 20 to 23 as compared to the previous year. The majority of these courses are multiple section courses and were serviced by only four full-time resident teaching personnel. Two extension specialists taught two of the courses (one course was offered both semesters) and three visiting lecturers assisted with one course and the laboratories of another course. Despite this, course sections had to be limited and several courses could not be offered because of lack of staff and laboratory space.

The Merchandising Field Work grew from 13 students in 1966-67 to 27 students in 1967-68, and three new cooperating stores were added to the program: Lord and Taylor's, and Bloomingdale's in New York, and Hahne's in Newark, N.J.

The Department sponsored a three-day field trip to New York for the Fashion Merchandising majors.

All of the full time faculty participated in the "Conversations" radio program by presenting one or more programs.

The extension program in home furnishings is primarily concerned with adult clientele in the art and design area, home beautification and appreciation and evaluation of art and design. The specialist has developed a successful program with low income families, helping them add color and decoration to their homes with little expense.

The clothing specialist devotes about equal time to 4-H and adult extension programs. The emphasis of the adult program is consumer education, socio-psychological aspects of clothing, history of clothing, grooming, and creative use of commerical patterns. The "Conversations" radio program is an important contribution to the School.

PROJECT PLANS AND NEEDS OF DEPARTMENT

1. The search for a Head for the Department must continue. It is imperative that this position be filled soon with a person qualified to direct the undergraduate program, develop a graduate program, and initiate a research program to support the graduate program and attract graduate students.

2. We urgently need an additional staff member in the Environmental Arts area. We are currently utilizing parttime personnel and visiting lecturers to merely remain operational. This arrangement offers no opportunity to develop a meaningful sequence of courses or even to offer needed courses. The services of these individuals are appreciated but they contribute nothing of genuine interest or value to the growth of the department or relief in areas such as of student advising. This person should be qualified to teach History of Decorative Arts, History of Costume, Interior Design, Display and related design techniques.

3. The extension specialist in clothing who has been teaching the core course "Man and Clothing" has found that the teaching of this course with its multiple sections both semesters is putting a severe strain on her contribution to her extension responsibilities; relief is needed here. As the Merchandising Field Work expands, help will be come a necessity in this area:

4. Textiles is an expanding field of knowledge and at least one additional course is needed in this field.

   We jump from a beginning course in clothing construction to a beginning course in costume design. This is unrealistic. At least an intermediate course in construction and a second course in design is needed.

5. Items 3 and 4 indicate a need for a staff person prepared in these areas.

6. To support these needs, a textile laboratory, an additional arts laboratory, an additional clothing laboratory are necessary.

* * * * *

MANAGEMENT AND FAMILY ECONOMICS DEPARTMENT

Annual Report (5-8) for July 1, 1967 - June 30, 1968

Submitted by: Verda M. Dale, Head

FACULTY PUBLICATIONS, RESEARCH GRANTS, RESEARCH PROJECTS AND OTHER PROFESSIONAL ACTIVITIES.

1. Massachusetts Home Economics Association grant of $250. to Verda M. Dale for preparation of a bibliography of home economics material adapted to the needs of the blind homemaker. Preparation of the bibliography is nearing completion.

2. Marjorie M. Merchant, Associate Professor, is project director of a research project under Title I of the Higher Education Act of 1965. The grant of $24,000 was awarded the Extension Division of Home Economics for work on education in market structure and price policies as related to the social and economic environment of families lacking economic freedom.

3. Edward K. Knapp, Assistant Professor, prepared a bibliography on housing the aged and served as a member of a planning committee for a conference on housing the aged for the Pittsfield Commission for Aging.

4. Edward K. Knapp is chairman of the Residential Subcommittee of the USDA Northeast Plan Service Committee.

5. Verda M. Dale completed research on Self-Actualization of Home Managers and the Relation to Family Member Participation in Family Activities, the subject of her Ph.D. dissertation.

6. Edward K. Knapp is currently engaged in research on Residential Heterogeneity of the Micro Neighborhood as it relates to Social Interaction, the topic of his Ph.D. dissertation.

MAJOR ACCOMPLISHMENTS OF DEPARTMENT

1. A new home management laboratory in Hampshire House was established when the Homestead was no longer available for class use.

2. Enrollments in HMC classes have continued to grow, making it necessary to offer classes more times during the year.

SPECIAL PROJECTS OR PROGRAMS

None.

FUTURE PLANS AND NEEDS

1. The specific plans and hopes for the department are:

   a. to develop an undergraduate curriculum in home management and family economics coupled with depth in the social sciences, for preparing graduates to work as home economists in social agencies, government agencies, and as lay volunteers in the community; and

   b. to establish a graduate program in the area of home management and family economics.

2. Personnel with competencies in the subject matter area is the major need. One person in the department retired this year. It is essential that this position be filled and others added if the department is to remain viable. The staff needed include:

   a. Family economics and/or consumer economic oriented person to teach undergraduate and graduate courses.

   b. Home management staff to assist in present and expanded program.

   c. The extension service needs in the above areas must be considered.

   d. Research can be initiated and strengthened only if sufficient personnel are available both for maintaining the teaching load and to investigate through research.

   e. Adequate secretarial and support staff need to be added.

3. Facilities are barely adequate now. If the area of household equipment is to be pursued, additional laboratory space and equipment will be necessary.. Office space will be needed for any expansion of personnel.

* * * * *

EXTENSION DIVISION OF HOME ECONOMICS

Annual Report for July 1, 1967 - June 30, 1968.

Submitted by: Winifred I. Eastwood, Head

Home Economics Extension is a continuing education program on subjects and problems related primarily to family, home and community life.

The teaching is programmed by two methods: one is seminars, workshops, conferences and meetings for a special interest group of professionals and/or lay persons; the second method is for lay leaders trained to teach small groups of homemakers organized into study groups. The county staff do a great share of the leader training for the study groups after being trained by the state staff.

Five examples of the special interest programs are:

University Day for Women, June 5 - A program is attached. Each year the Division offers a University program of one or two days for women. The Division is the only campus group with a program for and a direct interest in the woman as homemaker. Homemakers have little opportunity to hear faculty and have an experience on their University campus except through the Division's program. (Sixteen faculty are involved in the 1968 University Day For Women). If attendance is as other years, there will be between 200-300 attending.

The Massachusetts Builder - A state-wide survey conducted in 1967* indicated:

1. At least 177 builders looked favorably at the idea of an educational experience at the University of Massachusetts.

2. The survey indicated there is a gap in the continuing educational opportunities for builders. Training sessions (meetings) ranked low as informational sources. They indicated very little time is spent at any builder meetings.

---

*Edward K. Knapp, Residential Builder Survey, University of Massachusetts Cooperative Extension Service, 1967.

3. Builders had some very definite ideas regarding areas of interest to be included in an educational session.

The above background was used by Edward Knapp, Assistant Professor of Management and Family Economics, in planning the conference. "The

UNIVERSITY DAY FOR WOMEN

SKINNER HALL, UNIVERSITY OF MASSACHUSETTS

WEDNESDAY, JUNE 5, 1968

:30 REGISTRATION AND COFFEE HOUR
Skinner Hall Lounge

:30 WORKSHOPS (select one)

ART FOR LIVING — Room 18
Professor Herbert Paston
Textiles, Clothing and Environmental Arts

CURRENT AND FUTURE FOOD STYLES — Room 220
Professor Jane McCullough
Lecturer Carrie Johnson
Nutrition and Food

COMMUNITY RESPONSIBILITY FOR EMOTIONAL HEALTH AND SEX EDUCATION — Auditorium
Dr. William Darity
University Public Health

MEET THE POET — Room 217
Professor Robert Tucker
English

EARLY CHILDHOOD EDUCATION --PRE-SCHOOL, HEADSTART, NEW DEVELOPMENTS IN INFANT AND PRE-SCHOOL EDUCATION
Professor Ellis Olim — Room 4
Human Development

Mrs. Helen Harvey
Mrs. Anna Russel
Nursery School

2:30 LUNCH-Dining Room in Tower #5
Presiding: Winifred Eastwood, Head
Extension Division of Home Economics

RESEARCH: THE CREATIVE IMAGINATION
Dr. Edward Moore
Dean of the Graduate School and Coordinator of Research

RESEARCH: SCHOOL OF HOME ECONOMICS

MARKETPLACE AND THE DISADVANTAGED CONSUMER
Marjorie M. Merchant
Management and Family Economics

AMERICAN NEIGHBORHOOD AS IT RELATES TO SOCIAL INTERACTION
Edward K. Knapp
Management and Family Economics

LANGUAGE AND COGNITIVE DEVELOPMENT OF THE PRE-SCHOOL CHILD
Dr. Ellis Olim
Human Development

NUTRITIVE VALUE OF IRRADIATED CHICKEN AND CLAMS
Dr. Mark Bert
Nutrition and Food

WHY SO HIGH?
John Welles
Director of Housing

STUDENT LIFE IN THE TOWERS
Dr. Paul Brubacker
Southwest Area Coordinator

TOUR OF THE TOWERS
Directed by Winafred Schnarr
Southwest College Secretary

FAREWELL

Return by June 3, 1968 to: Conference Office
Hampshire House
University of Massachusetts
Amherst, Massachusetts 01002

$3.25 fee will include registration and lunch. DO NOT SEND PAYMENT IN ADVANCE

NAME _____

ADDRESS _____

_____ ZIP CODE _____

CHOICE OF WORKSHOP: 1st Choice _____

2nd Choice _____

UNIVERSITY DAY FOR WOMEN

JUNE 5, 1968

SKINNER HALL
UNIVERSITY OF
MASSACHUSETTS

Cooperative Extension Service
University of Massachusetts
Cooperating with
U.S. Department of Agriculture

UNIVERSITY DAY FOR WOMEN OFFERS AN OPPORTUNITY FOR YOU . . .

. . . TO HAVE A RICH EXPERIENCE OF CONTINUING YOUR EDUCATION

. . . TO HEAR OF SOME OF THE NEWEST DEVELOPMENTS AT THE UNIVERSITY

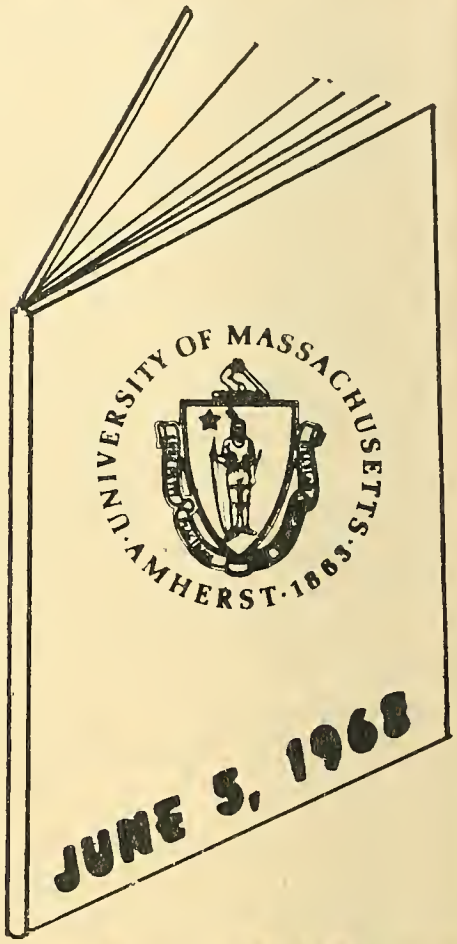
. . . TO MEET FACULTY OF THE UNIVERSITY

. . . TO SEE THE EXPANDING CAMPUS

. . . TO DEVELOP FRIENDSHIPS AND TO ENJOY FELLOWSHIP WITH OTHERS OF THE STATE

Issued by the Cooperative Extension Service, A. A. Spielman, Dean and Director, in furtherance of the Acts of May 8 and June 30, 1914; University of Massachusetts, United States Department of Agriculture and County Extension Services cooperating

UNIVERSITY DAY FOR WOMEN



SKINNER HALL
UNIVERSITY OF MASSACHUSETTS

Cooperative Extension Service
University of Massachusetts
Cooperating with
U.S. Department of Agriculture

3. Builders had some very definite ideas regarding areas of interest to be included in an educational session.

The above background was used by Edward Knapp, Assistant Professor of Management and Family Economics, in planning the conference, "The Massachusetts Builder." Eight University faculty were involved in the one-day conference from four different departments. Sixty builders attended on a day which drew a snowstorm - 110 had preregistered. Twenty-seven of the sixty agreed to help plan another conference in 1969. A mail evaluation brought the following responses:

Opinion of Conference	excellent	- 27
	average	- 12
	poor	- 1

Do The Poor Pay More? - An institute held in the southeastern part of the state (Bristol County), one of eight to be held in the next nine months under the Title 1, Higher Education Act of 1965. The institute provided an opportunity for professionals, lay leaders, aides and others working the low income family to explore market practices and policies which affect low-income consumers. Thirty-five agency leaders in the southeast assisted in planning the institute and in giving publicity to the effort. Over 150 attended the one-day institute. A second institute for the same group will be held in the fall of 1968. At that time the research now in progress on the market practices and policies of a selected market in Holyoke will be completed and will be summarized for the group.

The largest one group attending the institute were welfare workers. present change in the supervision of Massachusetts Welfare and the national attention to welfare programs has made the workers receptive to professional training. Directors and supervisors were most cooperative in the promotion of the institute.

One great plus of the institute was that it gave the Bristol County Extension staff (the institute was planned and organized by the Bristol Home Economists) an acquaintance with agency leaders in the area. Plymouth County staff also cooperated.

Speakers answered the question asked in the title, Do The Poor Pay More? in the affirmative and documented their answers. Dr. Everett S. Lee, Head, Department of Sociology and Anthropology, University of Massachusetts, lead one of the workshops. His participation has opened more opportunities for the Division to have further cooperation with the Department of Sociology and Anthropology.

Seminar: Sex Education held at the University of Massachusetts, Boston in the fall of 1967. The seminar was held for six weeks each Monday evening. A total of 170 persons registered. Attendance was approximately that number each night, including several non-registered auditors. The participants were predominantly professionals, nurses, physicians, teachers, school administrators, counselors and social workers from the greater Boston area. The seminar was publicized by Cooperative Extension, Massachusetts Department of Public Health and the Massachusetts Council on Family Life.

The purposes of the seminar were to acquaint participants with the most recent literature, audio-visual aids, and other sex education resources; to acquaint them with certain successful sex education programs in various parts of the country; to provide an opportunity to exchange ideas and information, and to discuss current sex education programs and problems in Massachusetts; to examine new concepts and controversial issues in the field of sex education; and to examine one's own feelings and attitudes about sexuality and sex education.

Certificates of seminar participation were issued to those registrants who satisfied a minimum of 30 hours work, including certain outside readings and writing a paper in addition to participating in the sex seminar sessions.

Plans to conduct two seminars next year on the same topic with county extension developing the organization.

Art Tour was the climax of a year's program in the state in Art & Design taught in the counties by Mrs. Rosa Johnston, Associate Professor, Textiles, Clothing & Environmental Arts, and by county staff trained by Mrs. Johnston. This is the third year for such a spring tour. Last year the visit was to the Springfield Art Museum, this year to Worcester Art Museum and the Lutheran Church of Worcester. One hundred and fifty "Extension students of art" from eight counties attended. The tour participants represented only a percent of the total "students" (perhaps 500) in the state who during the year had studied art either in seminars taught by the specialist or through the leader training method. The art museum furnished the faculty, Mr. Richard Muhleberger, Curator of Education, for the museum sessions. The murals in the Lutheran Church were explained by the parish staff.

The tour offers a rich experience and a new experience for many. The emphasis of the Extension program on topics of design, decoration, selection of art objects, building appreciation and an ability to appraise aesthetic values must be rather practical and applicable to the home. The tour in most part is a classical art experience and is indeed a climax to the winter's Extension program.

Leader Training

The second method explained in the first paragraph of the report, namely leader training, will be summarized by outlining the present situation in the use of the method.

1. Each year the county staff does more of the training, the state staff less; their role is to train the county Home Economists.

2. The study groups in the state are less than five years ago - three counties have no groups. Five years ago there was only one county without groups. The county Home Economist belief about groups as one method of teaching is the key to whether or not they are groups.

3. Groups are in all stages of "health". In every county there are newly organized groups enthusiastic about the program and in every county there are dying groups, bored, probably organized mainly for fellowship.

4. There is some question as to whether the method fits today's society -- argument can be mustered for either side.

The state staff presented 30 programs for the leader method in the 1967-68 State Program Guide. Only a third were new, the others a carry-over for one, two, or three years. Each county selected 10-12 of the thirty.

Special Programs

Two programs will be described - one, "Conversation," a weekly half-hour program over the four college radio (WFCR-FM) and the second, a special project on rehabilitation for the newly blinded homemaker.

Conversation is taped locally and aired weekly on the Eastern Educational Radio Network, and has been produced and moderated by a member of the Home Economics Extension. The program centers on topics of

ouse, home, family and community. All members of both the resi-
lent and Extension faculty have contributed to the program as well
s faculty from other schools and departments, thus providing con-
ersation with an interdisciplinary approach. Faculty other than
ome Economics in the past year have been Dr. Joseph Havens, Dr.
llsworth Wheeler, Dr. Dwight Allen, Dr. Everett Lee and Dr. Kenneth
icha. Conversation was listed this year by WFCR-FM as being the
nly program produced by a school at the University. Last year the
rogram was singled out as an outstanding example of Extension edu-
ational broadcasting in a national survey.

Rehabilitation of the Newly-Blinded Homemaker

his is a pilot project in Massachusetts, one of ten selected states.
he project is to explore and develop cooperation between the Voca-
ional Rehabilitation Department of State and Federal governments
nd Extension Home Economics toward the rehabilitation of the newly-
linded homemaker. Over the past three years, five county Home
conomists have developed some program and/or personal home visits
ith newly-blinded homemakers.

uring the past year it seemed more productive to work directly with
he home teachers of the blind of the State Commission of the Blind
n order to translate our home economics information into more use-
ble form for these non-sighted homemakers.

oth the Home Management and Nutrition Specialists have had several
raining periods with the home teachers and they in turn have used
he information in working with their homemaker clients.

he Massachusetts Home Economics Association provided funds for the
evelopment of a bibliography of home economics information adapted
or the use of blind homemakers. The preparation of this biblio-
raphy has been under the direction of Miss Verda M. Dale, Home
anagement Specialist, and is now nearing completion. The paucity of
nformation indicates clearly that this segment of our population has
een sorely neglected.

he Home Management Specialist will participate this summer, along
ith other Extension representatives from other states, in an insti-
ute for the blind at the University of Maryland. The major problem
f working with the newly-blinded homemaker is one of communication
ince most information and professional competence relies heavily
pon an assumed visual grasp of the environment. Therefore, work
ith the blind, while basically contributing to the same areas of

concern and problems as for any other group of homemakers, must also envelop special techniques for translating information into an easily grasped concept by sightless individuals.

In-Service Training For County Extension Home Economists

The Division faculty has a commitment to keep the County Extension Home Economists trained in subject matter for their role as teacher. This includes training at the University, conferences in the county and communications by telephone and letter. The estimated amount of work of any one Division faculty for this assignment would be 1/8 to 1/6 of his or her time.

The Division started a three year professional development program in December 1965 for both county and state Home Economists. The faculty for the program was selected from the Center for the Study of Liberal Education for Adults, Boston University. The focus has been on the adult educator working in an urban environment with individuals, families (middle income and low income) and with other agencies.

The training is now in the last year. The method this year is to develop case studies. County staff are grouped around specific cases such as low income, the young homemaker and homemaker study groups. The cases are used to focus discussion on the three listed aspects of the role of the County Home Economists. Plans now are to publish a case study booklet which may be of use to other states.

Summary

The report has given only a few of the programs of the Division. Faculty time in Extension has been the lowest during the 1968 spring semester of any time in the past 15 years. This is due to a heavy undergraduate teaching load, 1291 contact hours by Extension faculty, one faculty on sabbatical leave, a retirement in January, three working on the Ph.D., thus taking some time off and donating time to thesis research which we expect will contribute to an Extension bulletin and to their teaching program. The resident faculty has contributed very little to the Extension program total of 12 days in the fall semester, nine in the spring. A generous estimate would be there has been the time of five and one-half Extension faculty during the spring semester.

Presently, the need is to fill the position left vacant by the retirement of Miss Barbara Higgins, Professor, Management and Family Economics; to decrease the heavy teaching load of Mr. Joseph Burroughs, Professor, Human Development; and for the three working on the Ph.D. to complete their work. Another need is to involve more resident faculty in Extension assignments for which they feel real commitment and to point some of the research of the school toward problems of families of the state, thus to support Extension's programs. A program need is more attention to the problems of the low-income family - thus less to the middle income unless there is a staff increase. The Division has presently some program with the lower income; i.e., the Title 1 grant which relates to the low income as consumer, policies in the market and problems of the low-income buyer.

A real need is to have specific County Home Economists devoting full time to the low income audience plus aides drawn from the low-income community to assist - thus the Division's state staff would have the opportunity to relate to the audience in training county staff and doing analysis of problems.

Presently, most of the requests for state assistance by county staff is for the middle income audience. One County Home Economist wrote in her case study, "If managers and trustees who are middle income don't encourage work with low-income, why should Home Economists try?"

* * * * *

UNIVERSITY OF MASSACHUSETTS

SCHOOL OF NURSING

ANNUAL REPORT

July 1, 1967 - June 30, 1968

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UNIVERSITY OF MASSACHUSETTS
School of Nursing

July 1, 1967 - June 30, 1968

From: Mary A. Maher, Dean, School of Nursing

To: Dr. John W. Lederle, President, University of Massachusetts

Subject: Annual Report of the School of Nursing -
July 1, 1967 - June 30, 1968

Dear President Lederle:

It is my pleasure to submit herein the report of the School of Nursing for the fiscal year 1968; prepared according to the format received from the Office of R. J. McCartney, Secretary of the University.

May I take this opportunity to express my appreciation and that of the faculty for your continued administrative support and understanding.

Most sincerely,

Mary A. Maher

Mary A. Maher, Dean
School of Nursing

MAM/jfs

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Dear President Lederle:

It is my pleasure to report herein the report of the School of Nursing for the fiscal year 1960, prepared according to the forms received from the Office of [illegible], Nedernsey, Secretary of the University.

May I take this opportunity to express my appreciation and that of the faculty for your continued administrative support and understanding.

[illegible]

[illegible]
School of Nursing

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UNIVERSITY OF MASSACHUSETTS
School of Nursing

ANNUAL REPORT

July 1, 1967 - June 30, 1968

I. Appropriation: (State)

FISCAL YEAR	APPROPRIATION
1965-1966	$20,600.00
1966-1967	$26,200.00
1967-1968	$28,550.00

II. Personnel:

Professional -

Rank	Number of Personnel Sept. 1965	Sept. 1966	Sept. 1967	Unfilled Budgeted Position
Dean	1	1	1	
Associate Dean	1	1	--	1
Professor	2	2	2	
Associate Professor	2	3	2	1
Assistant Professor	5*	9*	11*	
Instructor	12	11	10	4
Total	23	27	26	6

*Two Assistant Professors paid from Mental Health Grant.

Secretarial -

				Grade
Principal Clerk	1	1	1	7
Junior Clerk-Stenographer	1	2	2	4
Junior Clerk-Typist	1	1	1	3
Total	3	4	4	

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FACULTY STAFFING PATTERN

University

Rank	Percentage	Percentage	Number
Professor	25	8	2*
Assoc. Prof.	20	8	2
Asst. Prof.	30	44	11
Instructor		40**	10

*Exclusive of Dean
**Three Promotions to Assistant Professor effective as of September 1968

PERSONNEL ACTION
(Professional)

Appointments, Promotions, Resignations, Sabbatical Leave:

Undergraduate Program:

Appointments - New = (N), or Replacements (R), Full Time (FT), Part Time (PT)

Date	Name	Rank	Area of Functioning	FT N	PT	FT R	PT
9/67	Loretta Eiben	Instructor	Medical & Surgical				x
"	Alice Friedman	Asst. Prof.	Medical & Surgical			x	
"	Anna Lee	Visiting Lecturer	Research		x		
"	Madeline Murphy	Instructor	Medical & Surgical				x
"	Joan Sweeney	Asst. Prof.	Medical & Surgical			x	
"	Aurora Villafuerte	Asst.Prof.	Medical & Surgical			x	
	Total			--	1	3	2

Promotions (3)

Recommended	Effective	Name	Rank	Area of Functioning
2/68	9/68	Benita Martocchio	Asst. Prof.	Medical & Surgical
2/68	9/68	Alice Norman	Asst. Prof.	Medical & Surgical
2/68	9/68	Charlene Phelps	Asst. Prof.	Medical & Surgical

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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sabbatical Leave

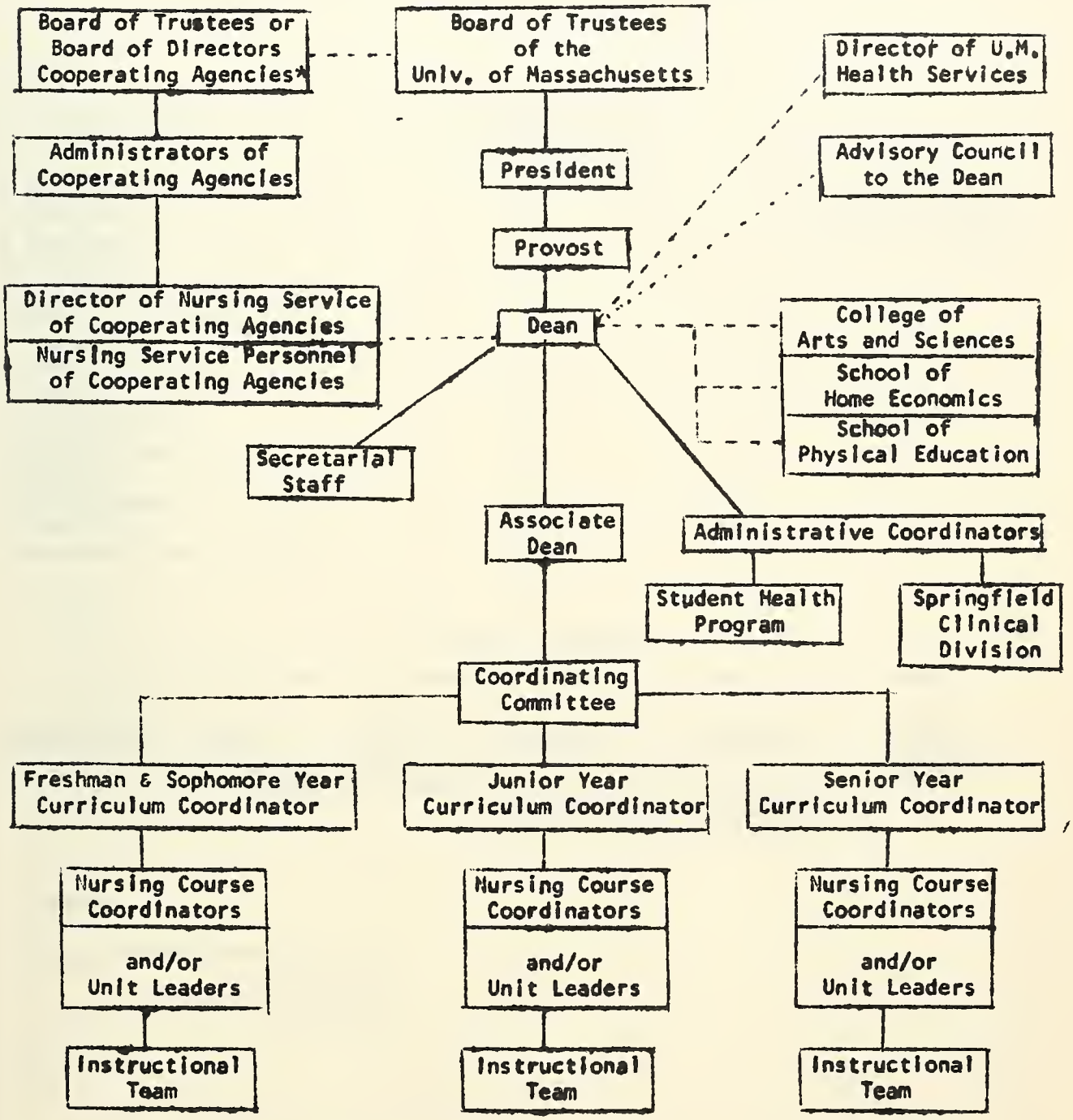
Date	Name	Rank	Area of Study	Location
2/1/68 (one semester)	Gellestrina DiMaggio	Professor	Problems Related to Sick New Born Infants	New Haven Medical Center, New Haven Connecticut

Resignations (6)

Name	Rank	Area	Date of Resignation	Length of Service Years
Charlotte Hoglund	Instructor	Psychiatrics	6/68	2
Derry Ann Moritz	Instructor	Medical & Surgical	6/68	2
Martha Newman	Instructor	Pediatrics	6/68	2
Bettye Frederic	Instructor	Public Health Nursing	1/20/68	1.5
Dorothy Sexton	Asst. Prof.	Medical & Surgical	6/68	4
Aurora Villafuerte	Instructor	Medical & Surgical	6/68	1

UNIVERSITY OF MASSACHUSETTS
School of Nursing

Functional Chart of Organization



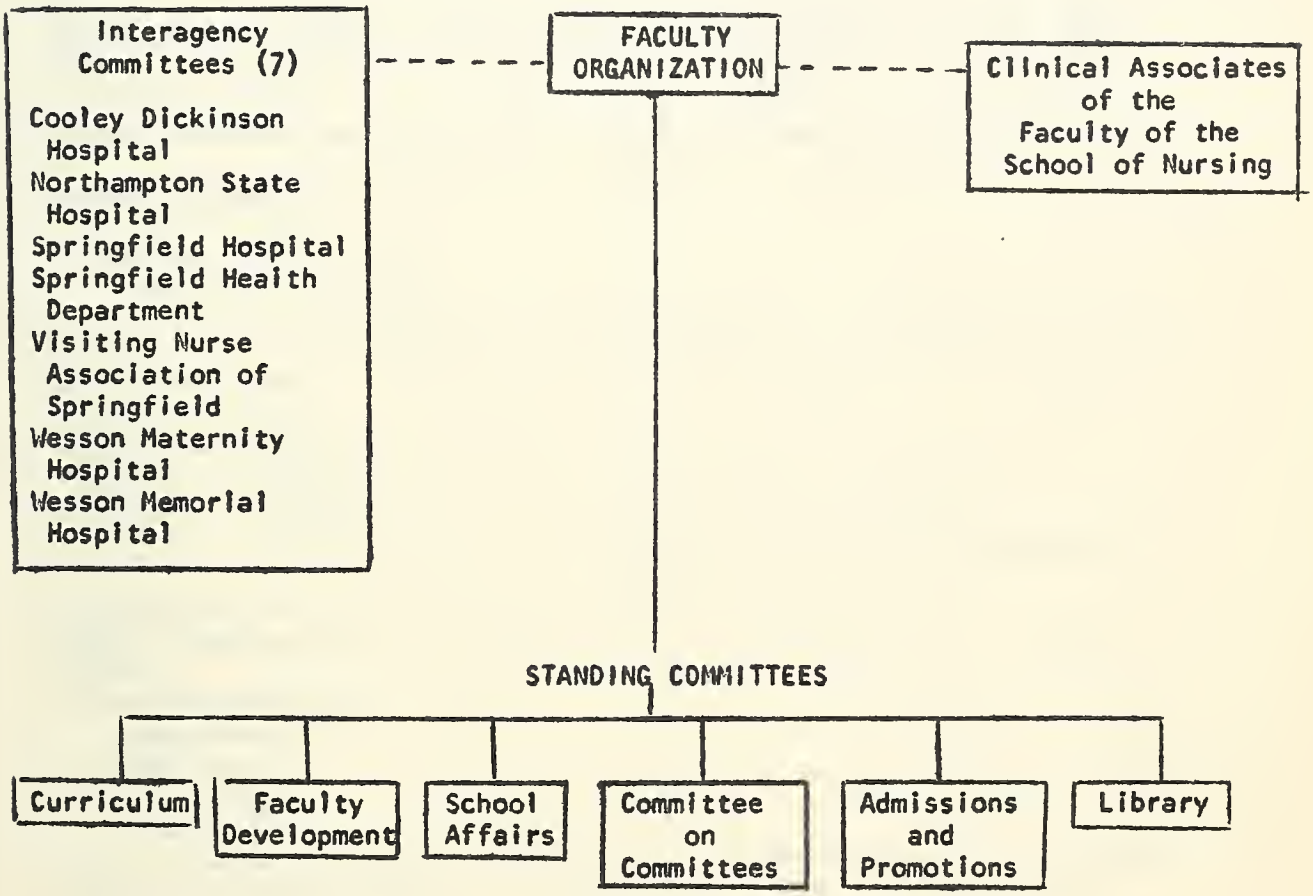
Legend: _____ Direct responsibility
- - - - Collaborative relationship
..... Advisory relationship
* Six Cooperating Agencies

Revised: 7/68

UNIVERSITY OF MASSACHUSETTS
School of Nursing

Faculty Organization of School of Nursing

1967-68

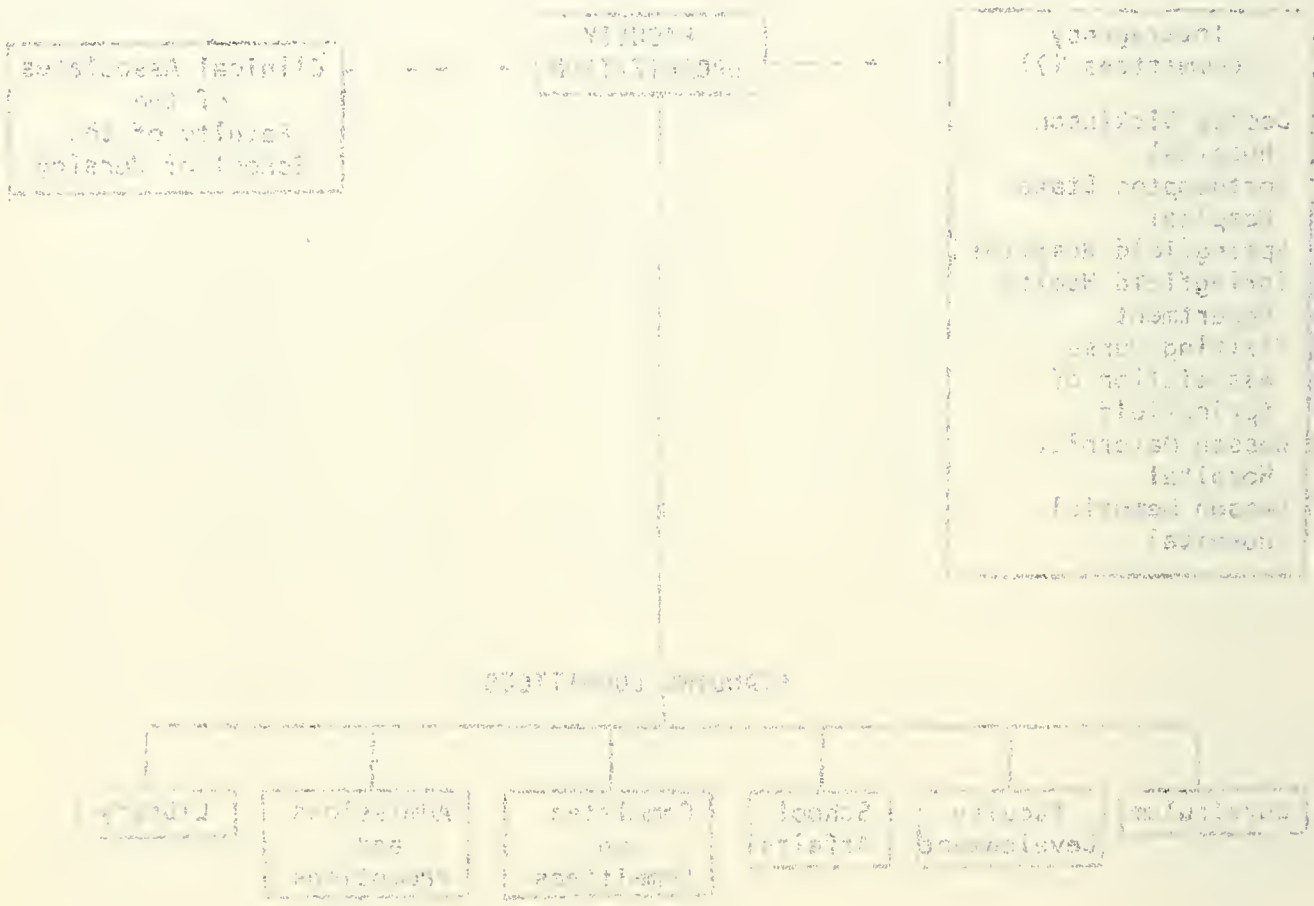


Legend:

_____ Direct responsibility

- - - Advisory relationship

9/67



STUDENTS AND CLIENTELE SERVED:

Category

Baccalaureate Program	Sept. 1965	Sept. 1966	Sept. 1967
Nursing Majors	178	253	280
Graduate Program			
Nursing Major Medical & Surgical	---	---	2
Job-Related Work Conferences for Registered Nurses in Practice. Offered by the School (summers)	25	38	41
New England Board of Higher Education in Nursing. Work conferences - Supervisor & Head Nurse (fall & Spring - 5 days each)	92	75	75
Total Registered Nurses	117	143	116

5. Faculty Publications and Grants:

a. Publications -

Virginia Earles, Associate Professor of Nursing
Chapter VI "Psysiological Concepts"
Contemporary Nursing: A Guide to the Nurse Returning to Practice, Sigme Cooper, McGraw Hill Book Co. (In press)

Mary Gilmore Helming, Professor of Nursing
(Editor) Symposium: Nursing Care of Patients with Medical Respiratory Diseases

Contributor to above: "Nursing Care of Patients with Chronic Obstructive Lung Disease"
Nursing Clinics of North America, W.B. Saunders Co. (in press)

Alice Friedman, Assistant Professor of Nursing
Contributor to Symposium: "The Patient with Chronic Obstructive Lung Disease, and His Care at Home"

Gellestrina DiMaggio, Professor of Nursing
Contributor to Symposium: The Child with Asthma

Anne Lee, PhD., Employer's Evaluation of Graduates of the University of Massachusetts School of Nursing (1968)

Benita Martocchio, Instructor of Nursing
Current Professional Activities of Alumnae
Univ. of Massachusetts School of Nursing (Classes 1958-66): A Report. August 15, 1967

Derry Moritz and Dorothy Sexton, Instructor and Asst. Professor
Article: "Clinical Evaluation--A Process in Progress. (In process)

Dorothy Sexton, Assistant Professor
Five Minute Tape "Care of the Unconscious Patient"
University of Wisconsin Dial Access Program - June 1968

b. Grants -

Hampshire County Public Health Association, Northampton, Mass.
A grant of $300 was awarded to the School of Nursing for the purpose of purchasing reference books and materials in the areas of Tuberculosis, Respiratory Diseases, and in other related subjects.

Project Grant - U.S. Public Health Service, Division of Nursing.
Application for the development of a laboratory in Community Nursing in the Brightwood area of Springfield was prepared by Mrs. Constance Petrunenko and Mrs. Ann Lee. It was submitted to the Division of Nursing on July 1, 1968. After review by the Project Grants Review Panel in November, the recommendation of the Panel are forwarded to The Advisory Council. This Council is responsible for making the final recommendation. Notification of the action taken as approved for funding (or non-approval) is anticipated by early February 1969.

5. Faculty Publications and Research

a. Publications -

Virginia Harvey, Associate Professor of Nursing
Chapter 11 "Psychological Concepts"
Contemporary Nursing: A Guide to the Nurse Naturalist in Practice
Sigma Gamma, Nursing Hall Fund Co. (in press)

Mary Malone Phillips, Professor of Nursing
Editor, Symposium: Nursing Care of Patients with Medical Respiratory Diseases

Contributor to Shyne: "Nursing Care of Patients with Chronic Obstructive Lung Disease"
Nursing Clinics of North America, W.B. Saunders Co. (in press)

Alice Friedman, Assistant Professor of Nursing
Contributor to Symposium: "The Patient with Chronic Obstructive Lung Disease, and His Care of Nurse"

Guillermina DiMaggio, Professor of Nursing
Contributor to Symposium: "The Child with Asthma"

Anna Lee, EdD., Employer's Evaluation of Graduates of the University of Massachusetts School of Nursing (1964)

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Current Professional Activities of Alumnae
Univ. of Massachusetts School of Nursing (Classes 1958-66): A Report, August 15, 1967

Barry Morris and Dorothy Sexton, Instructor and Assoc. Professor
Articles: Clinical Evaluation--A Process in Progress (in process)

Dorothy Sexton, Assistant Professor
Film Vicato Tape "Care of the Unconscious Patient"
University of Wisconsin Dial Access Program - June 1968

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Hampshire County Public Health Association, Northampton, Mass.
A grant of $300 was awarded to the School of Nursing for the purpose of purchasing reference books and materials in the areas of tuberculosis, emphysema, diseases, and in other related subjects.

Project Grant - U.S. Public Health Service, Division of Nursing, Application for the Development of a Laboratory in Community Nursing in the Brightwood area of Springfield was prepared by Mrs. Christopher Fairbanks and Mrs. [illegible]. It was submitted to the Division of Nursing on July 1, 1968. After review by the Project Grants Review Panel in November, the recommendation of the Panel are forwarded to the Advisory Council. This Council is responsible for making the final recommendation. Notification of the action taken as approved for [illegible] (or [illegible]) is anticipated by early February 1969.

MAJOR ACCOMPLISHMENTS

Self Evaluation of School of Nursing

Unquestionably one of the most significant accomplishments of 1967-68, though most time consuming, was related to the involvement of the faculty in the process and preparation of the School's Self-evaluation Report. Prepared primarily for use by the visitors of the National League for Nursing Accreditation Service[1], the Report proved to be a reflection of our major strengths and limitations at this point-in-time.

The interest of faculty members from other schools and departments, both in the preparation of and during the re-evaluation visit, was a rewarding experience. The beginning dialogue has potentials for a further exchange of ideas and discussion.

Likewise, the support of the University Administration of its School of Nursing became more visible to the faculty as-a-whole at this time.

The Nursing Directors of the several cooperating agencies likewise made every effort to demonstrate to the visitors a sincere interest and support of our educational program.

The association of the faculty with the visitors, Dr. Mary Liston, Dean, The Catholic University of America (Senior Visitor), and Miss Norma Woodruff, Director, University of Vermont Division of Nursing, proved to be both productive and educational.

The Limitations identified in the Visitor's Report were not unknown to the faculty. They present areas for study for the year ahead.

1. Continuing efforts should be made to study the effectiveness of the present faculty structure in relation to the vertical integration and progression of content and the overall curriculum development.

2. Attention should be focused on the desirability and feasibility of offering all Nursing courses over the period of a full semester rather than in two 7-8 week periods.

3. The present weekly schedule of courses should be studied so as to permit greater flexibility in the selection of electives and less concentrated periods of Clinical Nursing theory and practice.

4. Continuing efforts should be made for the development and strengthening of the library resources in Nursing and related fields.

Curriculum

Throughout the year a highly motivated and committed Curriculum Committee worked untiringly on the construction of a curriculum which should be both challenging and flexible. Considerable time was spent in interpreting the educational rationale of the curriculum to the entire faculty and for faculty discussion. Essentially the new curriculum should:

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[1]Schools of Nursing previously accredited are revisited every eight years by Visitors selected by N.L.N. Accreditation Service. (First accreditation May 1960, revisited April 15-18, 1968.)

- maximize the use of faculty talents and preparation.
- encourage nursing students, with various educational backgrounds, to attain a graduate degree in the shortest time possible.
- maximize the use of community health agencies in the geographic area
- influence the recruitment of nursing faculty interested in and capable of conducting and supporting research in nursing.

Course Innovation

Commencing in September 1967, Community Nursing and Maternal and Infant Nursing were taught concurrently over an entire semester (two times a year). This marks the first phase of a plan to develop an integrated course. The reaction of the faculty and students to the first year's experience has been favorable.

New Clinical Resources

Psychiatric Nursing

Collaboration with the Chief Psychiatrist of the Psychiatric Division of the Springfield Hospital and the Psychiatric Nurse faculty members provided an exceptionally fine learning environment for one section of the Psychiatric Nursing class.

Nursing Fundamentals

Since September 1967, the Cooley Dickinson Hospital has designated Nursing Units which are utilized by our faculty for the Sophomore students' experiences.

Student Achievement

The achievement of the students as reflected in a cumulative average of 3.0 or above is encouraging to the students and their teachers.

Fall 1967 (45)		Spring 1968 (47)	
Seniors	9	Seniors	9
Juniors	7	Juniors	10
Sophomores	16	Sophomores	11
Freshmen	13	Freshmen	17

Honors of Graduating Class (1968)

Magna Cum Laude: (2)	Adele Darrah Charlotte Wiley	
Cum Laude: (7)	Elizabeth Draper Janice Harrigan Karen Nelson	Kathleen Pelow Jean Plankey Lea Pratt Lois Toothaker

- [illegible]

- [illegible]

- [illegible] community health agencies in the geographic [illegible]

- [illegible] the [illegible] of [illegible] faculty interested in and [illegible] and supporting resources in nursing.

[illegible]

[illegible] Community Nursing and Internal and Infant Nursing [illegible] a year). [illegible] of a plan to develop an integrated course. The [illegible] of the [illegible] students to the [illegible] experience [illegible]

[illegible]

[illegible] Hospital [illegible] the Psychiatric Division of the Springfield Hospital and the [illegible] faculty [illegible] provided an [illegible] time [illegible] of the Psychiatric Nursing class.

Nursing Fundamentals

Since [illegible] 1967, the [illegible] Hospital has [illegible] Nursing [illegible] are utilized by our faculty for the [illegible] students' experience.

Student Achievement

[illegible] students [illegible] in a [illegible] of [illegible] students [illegible].

Fall 1967 (43)	Spring 1968 (44)
Seniors [illegible]	Seniors [illegible]
Juniors [illegible]	Juniors [illegible]
Sophomores [illegible]	Sophomores [illegible]
Freshmen [illegible]	Freshmen [illegible]

Honors of Graduation Class (1968)

Magna Cum Laude: (2) [illegible]

Cum Laude: (7) [illegible]

School of Nursing Honors Program

The continued interest of the faculty in promoting Honors Work for students with capabilities and interests in a research approach to problem solving continues. Four students completed their studies. Their topics were:

Mary Ellen Crowley - "Measurement of the Amount of Knowledge College Students Have About Epilepsy and A Comparison of Their Attitudes Toward Epileptics"

Harri Freedman - "A Developmental Tool for the Assessment of the Cerebral Palsied Child"

Karen Nelson - "The Concerns of Parents of Premature Infants"

Gail Russell - "Some Factors Affecting Diabetic Children's Knowledge of Their Disease"

University Honors Program

Plans have been completed with the Director of the Honors Program wherein qualified seniors may participate in the University Honors Program commencing in 1968.

Continuation Grant - National Institute of Mental Health

The School has received a Grant for the integration of Mental Health and Psychiatric Nursing Concepts throughout the baccalaureate program for the past 14 years. (termination date 6/30/69)

An application for an additional five year Grant was submitted in February 1968. The new proposal included objectives much broader in scope than had previously been identified, yet within the feasibility of attainment.

The application was approved by the Advisory Council of the National Institute of Mental Health at its June meeting. Decisions as to funding cannot be made, however, until Congress has acted in regard to Federal Grants and budget allocations.

The assignment of a full time Clinical Psychologist to the faculty of the School, a year prior to the expected date of funding, will make it possible to initiate some of the innovations included in the proposal during 1968-69.

Laboratory for Community Nursing (Brightwood Area - Springfield)

For the past three years, the faculty, cognizant of the School's need to provide additional resources and facilities for an expanding student enrollment, has worked untiringly in developing a laboratory for Community Nursing in the Brightwood Area.

In 1967 the Springfield Housing Authority allocated a five-room apartment in the Riverview Housing Project to the School of Nursing for use as a nursing station.

The residents, primarily representative of Black and Puerto Rican families, present the apathy characteristic of people, who for generations have experienced the deprivation associated with poverty.

The active involvement of the Public Health faculty in improving medical and nursing care of the families has not gone unnoticed by the several professional health, welfare, and social agencies sharing the responsibility of providing

[illegible]

[illegible]

[illegible]

service to the families. Of particular significance is the interest which has been demonstrated by the Director of the Ambulatory Service of the Springfield Hospital, and the newly appointed Chief of Pediatrics.

For a month during the summer, the salary of a Public Health Nurse, a Psychiatric Nurse, and a secretary will be paid from some of the unexpended funds of our Mental Health Grant of last year. The continuation of Community Nursing Services to the families, for at least a small portion of the summer, provides visible evidence to the families of the sustaining concern of the School in their progress toward health.

As an outgrowth of the experience, a five year Project was prepared and submitted to the Division of Nursing, U.S. Public Health Service. If the Project is funded, a more aggressive approach will be made in developing the Laboratory for Community Nursing.

Faculty Development

- Faculty interested in continuing to gain additional insight into their behavior and functioning, especially in group situations continues to meet with the Psychiatrist of the University Health Service.

- Attendance of interested faculty at Professional Meetings, and the sharing of new concepts presented at the meetings with the faculty as a whole promoted faculty interest and discussion.

- A day's work conference with Professor Faye McCain, University of Michigan School of Nursing functioning as the principal resource person, proved to be especially valuable. Focus: "Systematic Process of Nursing Assessment".

- The sharing of the week's experience of a Work Conference at the University of California School of Nursing, San Francisco by a faculty member who attended the workshop promoted excellent discussion as to the relative value of a totally integrated baccalaureate Nursing Program.

- A beginning was made in extending the interest of the faculty in research. A few group meetings and several conferences with individual faculty members concerned with research, with our part time Lecturer in Nursing Research proved to be most helpful.

- Faculty-student Conferences on Nursing Care were a new innovation this year. Initiated and directed by the faculty member developing the Graduates Program in Medical and Surgical Nursing. The faculty and students have thoroughly explored and discussed a patient's health problems, needs, and the consequences of nursing intervention.

Inter-University Work Conferences

The majority of the faculty has continued to participate in the annual Inter-University Work Conferences sponsored by the New England Council of Higher Education in Nursing and funded by the U.S. Public Health Service, Division of Nursing. The fifth such work conference, topic: Humanities in a Generic Nursing Curriculum, held the last week in June 1968, proved to be a thoroughly meaningful experience.

Graduate Program

Enrollment in Medical and Surgical graduate program has been influenced negatively by the decision of the N.L.N. Review Panel for Reasonable Assurance of Accreditation/not to grant such status to the program which was functionally rather than clinically oriented. As a consequence, U.S. Public Health Training stipends were not available to the students desiring to initiate graduate study.

A new program with a strong core of clinical content was developed, and an application for Reasonable Assurance of Accreditation will be submitted this summer.

School of Nursing University Medical Center Relationships

Dialogue has continued with members of the Advisory Council to the Dean of Nursing, the Dean of the Medical School, Associate Dean of the Medical Center, and Provost Tippo as to inter-school collaboration.

Although the 400 bed University Hospital will hardly be ready to receive patients before 1971, thus influencing the time when clinical resources and facilities can be utilized for clinical nursing experience, there remains several areas deserving of further exploration.

- There was no question as to the Number One priority to be afforded the School of Nursing for the use of the clinical facilities and resources of the Medical Center.

- The design of the baccalaureate Nursing Program , and more especially its clinical nursing components will require further study.

- The needs for clinical experiences and research opportunities for the Graduate Program likewise will necessitate more definitive planning.

- The location and design of the new Nursing School facility must be determined.

School of Nursing Honors Society

During the past two years a Faculty Advisor and a committee of students meeting the criteria for membership in Sigma Theta Tau (National Nursing Honors Society), prepared materials essential for initiating a Chapter at the University of Massachusetts School of Nursing.

An application was submitted to the National Office. A visit was made to the School by one of the officers. The Visitor, following her meeting with the students and the Faculty Advisor, expressed her approval of all that had been accomplished. She was most favorably impressed with the students; their preparation for her visit, and the nature of their inquiries.

One criteria for approval was not met by the School, namely "National League Accreditation of all programs". The graduate nursing program had been denied reasonable assurance by the League.

The Faculty Advisor and students have, however, continued to develop the School's Nursing Honor Society, and look forward to the time when the local Society can become an affiliate of the National Society.

Future Needs and Plans

The complexity of the health needs of society places a heavy responsibility upon Institutions of Higher Education preparing practitioners, teachers, and researchers qualified to function in the "caring" professions.

Baccalaureate Nursing Education

There is every indication that the demands of qualified high school students seeking admission to baccalaureate nursing program will increase. In addition, the number of candidates seeking admission, as transfer students, after two years of general education, is increasing annually. More recently candidates with a B.S. or B.A. degree are eager to earn a second bachelor's degree with a major in Nursing.

The number of Registered Nurses (graduates of diploma and associate degree programs) desiring to meet the requirements for a bachelor's degree with a major in Nursing, and seeking admission at the University, has spiraled each year.

While the number of diploma programs has decreased (1962 - 49; 1967 - 43) the number of associate degree nursing programs has increased (1962 - 2; 1967 - 8).

It would appear that graduates from these two programs will continue to seek admission to a baccalaureate nursing program for some years to come. There is little question but what Public Institutions of Higher Education in Massachusetts, offering a baccalaureate nursing program should assume the major responsibility in behalf of qualified Registered Nurses desiring to complete the requirements for a baccalaureate degree.

Baccalaureate Nursing Programs In Massachusetts Public Institutions of Higher Education:

	Current	Projected
University of Massachusetts	x	--
State College - Fitchburg	x	--
State College - Lowell	9/1968	--
State College - Salem	--	x
Southeastern Mass. T.I.	--	x

ADMISSIONS[2]

Type of Program	1962 Schools No.	1962 Adm.	1963 Schools No.	1963 Adm.	1964 Schools No.	1964 Adm.	1965 Schools No.	1965 Adm.	1966 Schools No.	1966 Adm.	1967 Schools No.	1967 Adm.
Baccalau.	6	306	6	349	6	375	6	397	6*	561	6	532
Assoc.	2	38	3	57	5	201	5	286	8	325	8	379
Diploma	49	2231	49	2242	49	2339	47	2238	45	1869	43	1923
Total	57	2575	58	2648	60	2915	58	2921	59	2755	57	2834

*Massachusetts General Hospital - Radcliffe College program was discontinued in 1965; Northeastern University initiated its program in 1966.

The Study of Nursing Education in the Commonwealth of Massachusetts prepared for the Board of Higher Education, June 1968 includes among its recommendations The Development of a System of Nursing Education. The University of Massachusetts School of Nursing should be in a position to participate actively and creatively in the implementation of this recommendation.

Graduate Education in Nursing

The study referred to above, afforded the highest priority to the preparation of nurses at the Masters and Doctoral levels. The University of Massachusetts School of Nursing, at this point of time, is the only public institution with potentials for developing graduate programs.

The existing Medical and Surgical Nursing program has a small enrollment. This is due largely to the unavailability of U.S. Public Health Service, Division of Nursing Traineeships. N.L.N. accreditation of the program will hopefully be forthcoming in 1968. A University Fellowship was awarded to the School this year, thereby making it possible for a very well qualified student to study full time.

The relationship of graduate programs in Nursing to the Medical Center (University Hospital) in Worcester is in the process of study.

The following additional graduate programs have been given consideration. The development of graduate programs are dependent upon the availability of well qualified faculty, the accessibility of good clinical resources, and the demands of qualified students:

Maternal and Child Nursing

[2]Mary F. Malone, Study of Nursing Education in the Commonwealth of Massachusetts, The Massachusetts Board of Higher Education, Boston 1968.

[illegible]

[illegible] of program	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Percent Hospital - Centralia College program was [illegible] Lewis-Northwestern University, related its program in [illegible].

[illegible] Education in the Community in the [illegible] for the [illegible] of higher education, [illegible] recommendations the direction and of a system of [illegible]. The [illegible] or [illegible] school in nursing should [illegible] participate actively and directly in the implementation of this recommendation.

[illegible] Education in Nursing

The study referred to above, stressed the [illegible] of nurses at the [illegible] level. The [illegible] of [illegible] level of training, at this point of time, [illegible] essentials for [illegible] programs.

The existing medical and surgical nursing program has a [illegible] in the supply to the [illegible] of U.S. Public Health Service, [illegible] Training [illegible]. [illegible] administration of the program will [illegible] in [illegible] in [illegible]. [illegible] required to the [illegible] [illegible] is possible for a [illegible] modifying [illegible] [illegible] time.

The relationship of [illegible] practice in nursing to the [illegible] [illegible] is [illegible] in the process of [illegible].

The following [illegible] are [illegible] [illegible] [illegible] are [illegible] [illegible] [illegible]

Public Health Nursing Education
Psychiatric-Mental Health Nursing
Administration of Educational Programs in Nursing

The Committee on Graduate Education in Nursing of the New England Council of Higher Education in Nursing is deliberating on the feasibility of Regional Planning for graduate education.

Faculty

While candidates for a faculty position are generally impressed with the University and the School of Nursing, recruitment continues to be a major problem in promoting and maintaining a sound educational program. Factors mitigating against recruitment seem to be:

1. A relatively small number of nursing faculty are being prepared at the Masters or Doctoral levels each year.

2. Competition between Schools of Nursing for faculty and the bargaining position of a potential faculty member, particularly as to salary and academic rank.

3. Increases in the number of baccalaureate and associate degree programs in Massachusetts and in all states, recruiting faculty from an all too limited pool.

4. Interest of qualified faculty in teaching nursing in a medical center environment where the members of the various professional staffs are committed to teaching and quality patient care.

5. The separation of the clinical settings from the campus, thereby creating a hardship for new faculty who find purchasing an automobile a major expense.

6. High cost of living in Amherst and Massachusetts such as:
   Rentals
   Excise, Income, and Sales Taxes.

7. Absence of a visible School of Nursing facility on the University campus.

8. No assurance that a faculty member may attend at least one professional meeting a year with major expenses paid by the University.

9. Personnel Policies:
   - Merit salary adjustment as opposed to an annual salary increment.
   - Time factor related to a possible salary increase. (September of one year to February of the second year of employment)
   - Number of years in an academic rank a requirement for promotion eligibility regardless of the demonstrated high performance of a faculty member.
   - Non-participation of the University in Social Security or T.I.I.A.

Faculty recruitment is extremely time consuming. While all faculty are encouraged to participate in the recruitment, the responsibility is vested

in the Dean. fully 30% of her time is devoted to this task. She is assisted by the Advisory Personnel Committee in interviewing candidates. Recommendations are made to the Dean by the Committee.

Reorganization of the School of Nursing

The existing organization of the School is under study. -- Hopefully by the Spring Semester an organizational pattern will be developed.

Limitations of the Four Year Baccalaureate Program

Each year an increasing number of freshmen enter the University academically better prepared.

The best possible conditions of student life which promote individual growth must be fostered. Student-teacher creative innovations and experimentation coupled with academic excellence--needs to replace the traditional methods of teaching.

Students desiring to experience a curriculum offering an enrichment in liberal arts and behavioral sciences are frequently dissatisfied with the heavy biological (23 credits) and physical science requirements of the School's curriculum:

Chemistry (10)	
Chemistry, General - 111-112	6 credits
Biochemistry	4 credits
Zoology (9)	
Zoo. 1, Introduction	3 credits
Zoo.137-138, Human Anatomy and Physiology	6 credits
Microbiology (4)	
Micro.140, Introduction	3 credits
141 Laboratory	1 credit

Efforts to effect changes in credit allotment of Chemistry as the prerequisite for Zoology 137 and 138 have been unsuccessful.

Improvement lies in the reconstruction of the curriculum. some of the factors considered are:

1. selection of freshmen with high potentials for high academic achievement, and if necessary, limit the number admitted.

2. increasing the baccalaureate nursing program to 4.5 or 5 years.

3. admit qualified students to the School of Nursing after two years of general education and offer a three year Nursing Program.

4. By-pass the baccalaureate degree and offer a masters program in Nursing as the first degree for outstanding well-qualified students.

While there appears to be limitations in the use of our clinical resources under the existing pattern of use, it is highly possible that different patterns can maximize their usefulness to us. This area is a challenge to the faculty.

School of Nursing Facility

It seems redundent to again state the need for a School of Nursing facility. This has been stated again and again over the past seven years. While originally high on the priority list for planning money, the School now finds itself disqualified for a feasibility study (Master Planning Committee priorities).

The uncertainty of the location of the School of Nursing may be a factor. Shall it be Amherst or Worcester? In the interim, adequate space is essential for the functioning of the School. The best utilization of space in Morrill IV N., (allocated to the School of Nursing) should be determined by the Dean and the faculty.

The current allocation of secretarial staff is a real handicap to the School. Several efforts to effect an improvement have not corrected the situation. The rationale of assigning:

1 Grade 3
2 Grade 4's
1 Grade 7

to the School has little validity when one appreciates the nature of the tasks to be effected by the staff. An administrative assistant and upgrading of all staff would greatly improve the functioning of the School.

Summary

We emerge from a year wherein many problems have been solved, others have become challenges, and still others will require the combined effort of several individuals to effect a solution.

The primary factors which have brought satisfactions throughout the year are the commitment of the faculty; the sustained interest and generally high achievement of the students, and the cooperative efforts of the secretarial staff.

In view of the recent recommendations of the American Nurses Association as to salaries, the salary structure, particularly for instructors and assistant professors will need to be examined. A new graduate of a baccalaureate nursing program may expect a minimum annual salary of $8500.

The entire functioning of the School can be enhanced only when a qualified Associate Dean is appointed. Efforts thus far have been unsuccessful.

The School's library holdings need to be materially increased within the next year. references essential for teaching are the rightful expectation of a faculty.

UNIVERSITY OF MASSACHUSETTS
School of Nursing

FACULTY

1967-68

Miss Mary A. Maher, R.N. (Rhode Island Hospital School of Nursing); B.S. (Columbia University); M.A. (Columbia University)

Dean, School of Nursing

Maternal and Child Nursing:

Miss Gellestrina T. DiMaggio, A.B. (Connecticut College for Women); M.N. (Yale University School of Nursing); M.A. (Columbia University)

Professor, Maternal and Child Nursing

Mrs. Joan Millett, B.S.N. (St. Joseph's College School of Nursing); R.N., M.A. (Columbia University)

Instructor, Maternal and Child Nursing

Miss Martha L. Newman, B.S. (University of Cincinnati College of Nursing and Health); M.S. (University of Cincinnati)

Instructor, Maternal and Child Nursing

Miss Loretta R. Sharp, B.S. (University of Colorado); M.A. (University of Chicago)

Associate Professor, Maternal and Child Nursing

Miss E. Ann Sheridan, R.N. (Catherine Laboure School of Nursing); B.S. (Boston College); M.S. (University of Pennsylvania)

Assistant Professor, Maternal and Child Nursing

Miss Edith G. Walker, R.N. (Episcopal Hospital of Philadelphia); B.S.N.E. (University of Pennsylvania); M.A. (Columbia University)

Assistant Professor, Maternal and Child Nursing

Nursing of the Adult:

Miss Elizabeth A. Clarke, A.B. (Mt. Holyoke College); M.S. (Columbia University); M.N. (Yale University School of Nursing)

Assistant Professor, Medical and Surgical Nursing

Miss Mary F. Condron, R.N. (St. Francis Hospital School of Nursing); B.S.N.E. (The Catholic University of America); M.S.N. (The Catholic University of America)

Assistant Professor, Medical and Surgical Nursing

Mrs. Alice Friedman, R.N. (Massachusetts General Hospital School of Nursing); B.S. (Columbia University); M.S. (Boston University)

Assistant Professor, Medical and Surgical Nursing

Miss Mary G. Helming, R.N. (Massachusetts General Hospital School of Nursing); B.S. (Simmons College); M.S.N. (The Catholic University of America)

Professor of Nursing

Miss Karen R. Johnson, B.S. (Hamline University); M.Ed. (University of Minnesota)

Instructor, Medical and Surgical Nursing

Miss Elaine LaMonica, B.S. (Columbia Union College); M.N. (University of Florida)

Instructor, Medical and Surgical Nursing

Miss Benita C. Martocchio, B.S. (Hartford College); R.N. (Hartford Hospital School of Nursing); M.S. (Western Reserve University)

Instructor, Medical and Surgical Nursing

Miss Derry A. Moritz, B.S. (Western Reserve University); M.Ed. (Columbia University)

Instructor, Medical and Surgical Nursing

Miss Jane E. Nicholson, R.N. (Mt. Auburn Hospital School of Nursing); B.S. (University of Utah School of Nursing); M.S. (Boston University School of Nursing)

Assistant Professor, Medical and Surgical Nursing

Miss Alice Norman, R.N. (Westchester School of Nursing); B.S. (Western Reserve University); M.S. (Western Reserve University)

Instructor, Medical and Surgical Nursing

Miss Charlene Phelps, B.S. (University of Connecticut School of Nursing); M.S. (Western Reserve University)

Instructor, Medical and Surgical Nursing

Miss Dorothy L. Sexton, R.N. (St. Raphael School of Nursing); B.S. (Boston College School of Nursing); M.S. (Boston University School of Nursing)

Assistant Professor, Medical and Surgical Nursing

Miss Joan Sweeney, R.N. (Springfield Hospital School of Nursing); B.S. (Columbia University); M.A. (Columbia University)

Assistant Professor, Medical and Surgical Nursing

Miss Aurora Villafuerte, B.S.N. (University of the Philippines); M.S.N. (The Catholic University of America)

Instructor, Medical and Surgical Nursing

Psychiatric-Mental Health Nursing:

Mrs. May B. Hall, R.N. (St. Barnabas Hospital for Women and Children); B.S.N.E. (Marquette University); M.S. (Boston University School of Nursing)

Assistant Professor, Psychiatric-Mental Health Nursing

Miss Charlotte Hoglund, R.N. (Memorial Hospital School of Nursing); B.S. (University of Virginia); M.Ed. (Columbia University)

Instructor, Psychiatric-Mental Health Nursing

Mrs. Helen M. Whitbeck, B.S.N.E. (Marquette University); M.S. (Boston University School of Nursing)

Assistant Professor, Psychiatric-Mental Health Nursing

Public Health Nursing:

Mrs. Bettye Frederic, B.S. (Dillard University School of Nursing); M.S. (Boston University School of Nursing)

Instructor, Public Health Nursing

Mrs. Constance A. Petrunenko, R.N. (Children's Hospital School of Nursing); B.S.N. (Boston University School of Nursing); M.A. (Columbia University)

Assistant Professor, Public Health Nursing

Mrs. Ruth Smith, R.N. (Massachusetts General Hospital School of Nursing); B.S.N. (University of Connecticut); M.N. (University of Washington)

Instructor, Public Health Nursing

Graduate Program

Miss Virginia Earles, B.S. (Syracuse University); M.S.N.E. (Syracuse University)

Associate Professor, Medical and Surgical Nursing

Part-Time Faculty

Mrs. Loretta Eiben, B.S. (University of Iowa); M.S. (University of Iowa)

Instructor, Medical and Surgical Nursing

Mrs. Anne Lee, PhD. (University of Pennsylvania)

Lecturer, Research in Nursing

Mrs. Madeline Murphy, R.N. (Springfield Hospital School of Nursing); B.S. (Boston University); M.S. (Boston University)

Instructor, Medical and Surgical Nursing

Mrs. Kathryn B. Nickolls, B.S. (University of Oklahoma); A.D.A. (University Hospital, University of Michigan)

Lecturer, Clinical Nutrition

c. Faculty Activities -

I. Representation on University Councils and Committees:

Faculty	Committee
Mary A. Maher, Dean	Dean's Council University Senate Long Term Planning Council Graduate Council
Elizabeth A. Clark Assistant Professor	Scholarships, Financial Aid, Placement and Study Abroad
Virginia Carles Associate Professor	Academic Affairs Graduate Council
Mary F. Condron Assistant Professor	Tenure & Grievance
Mary G. Helming, Professor	Faculty Senate Board of Admissions & Records
Karen R. Johnson, Instructor	University Senate Comittee on Committees Student Affairs
Alice D. Norman, Instructor	Summer Session
Constance A. Petrunenko Assistant Professor	Health Council
E. Ann Sheridan Assistant Professor	University Affairs
Edith Walker	University Affairs Chairman, Teacher of the Year Award Committee

II. Participation in Residence Halls:

Gellestrina DiMaggio	Eugene Field	Faculty Fellow to 1/30/68
Alice Friedman	Eugene Field	Faculty Fellow (replaced Miss DiMaggio
Mary Helming	Thoreau	Faculty Fellow 9/67 - 6/68
Charlotte Hoglund	Patterson House	Faculty Fellow 9/67 - 6/68
Benita Martocchio	Patterson House	Faculty Fellow 9/67 - 6/68

Speakers at Meetings:

Mary G. Helming
Institute - Care of Patients with Respiratory Disease
Sponsored by Hampshire County Public Health Association
Topic: "Nursing Care of Patients with Chronic Obstructive Lung Disease"

Institute - Care of Patients with Respiratory Disease
Sponsored by the Hampden County Tuberculosis and Public Health Association
Topic: "Nursing Care of Patients with Chronic Obstructive Lung Disease"

Derry A. Moritz
Work conference for Supervisors and Head Nurses
Sponsored by the N.E. Council on Higher Education in Nursing
Topic: "Behavioral Objectives: A Method of Evaluating Clinical Practice"

Dorothy Sexton
Boston University School of Nursing
Topic: "Nursing Assessment: Body Image"

Loretta Sharp and Joan Sweeney
Radio Conference for Nurses
"Principles for Pill Pushers", Four one-hour broadcasts - May 13-16, 1968 from faculty member's office in Amherst
Radio Conference for Nurses, Sponsored by the Department of Post-Graduate Education, University of Albany

Edith Walker
Conference on Family Planning
Sponsored by the Massachusetts Department of Public Health
Topic: "The Role of the Nurse in Sex Education"
Nursing Conference sponsored by the American Council of Obstetricians and Gynecologists
Panel Member: The Role of the Nurse in Family Planning

III. Consultation:

Dorothy Sexton	Henry Heywood Hospital School of Nursing	Gardner, Mass.
	Somerville Hospital School of Nursing	Somerville, Mass.
Virginia Earles	Somerville Hospital School of Nursing	Somerville, Mass.
Gellestrina DiMaggio	Massachusetts General Hospital	Boston, Mass.

Contributions to Professional Organizations:

Massachusetts Nurses Association
Mary G. Helming, 1st Vice-President and Board Member
Alice Friedman, 3rd Vice-President and Board Member

Massachusetts Nurses Association, District I
Elizabeth Clarke, Board Member

Massachusetts League for Nursing
Mary G. Helming, Member, Scholarship Committee
Benita Martocchio, Member, EACT Section
Elizabeth Clarke, Member, Committee on Nursing in Disaster
May B. Hall, Chairman, Council on Psychiatric & Mental Health Nursing

New England Council of Higher Education in Nursing
Members of the Council:
Elizabeth Clarke
Gellestrina DiMaggio
Virginia Earles
Mary Helming
Mary A. Maher

Members, Planning Committee, 5th Inter-University Work Conference:
Derry Moritz
Dorothy Sexton

Massachusetts Committee on Children and Youth
Mary A. Maher, Member

Massachusetts Public Health Association
Alice Friedman, Member, Program Committee

Massachusetts Board of Registration in Nursing
Mary A. Maher, Member

American Heart Association (Western Massachusetts Chapter)
Constance Petrunenko, Board Member

American Cancer Society (Western Massachusetts Chapter)
Constance Petrunenko, Member, Service Committee

American Council of Obstetricians and Gynecologists Nursing Conference
Edith Walker, Member, Planning and Program Committee

Hampshire Public Health Association
Mary A. Maher, Vice President

OWDIN (Open Wide the Doors In Nursing)
Program sponsored by Boston University School of Nursing for assisting black and other potential candidates for Nursing Programs
Alice Friedman, Liaison Faculty Member.

School of Nursing Committees:
Committees of the Faculty -

Committee on Committees
- Virginia Earles, Chairman
- Elizabeth Clarke
- Mary Helming
- Karen Johnson
- Jane Nicholson

Faculty Organization
- Mary Maher, Chairman
- Elizabeth Clarke, Secretary
- All Faculty Members

Committee on Admissions & Promotions
- Benita Martocchio, Chairman
- Charlotte Hoglund, Secretary
- Mary Condron
- Karen Johnson
- Ruth Smith

Library Committee
- Alice Norman, Chairman
- May Hall, Secretary
- Jane Nicholson
- Elaine LaMonica
- Martha Newman
- Constance Petrunenko
- Edith Walker

Curriculum Committee
- Charlene Phelps, Chairman
- Gellestrina DiMaggio (Fall Semester)
- Virginia Earles
- Bettye Frederic (Fall Semester)
- Elaine LaMonica (Spring Semester)
- Martha Newman (Spring Semester)
- Loretta Sharp
- Anne Sheridan, Secretary

Committee for Faculty Development
- Derry Moritz, Chairman
- Joan Sweeney, Secretary
- Mary Helming
- Charlotte Hoglund
- Helen Whitbeck

Committee on School Affairs
- Dorothy Sexton, Chairman
- Helen Whitbeck, Secretary
- Elizabeth Clarke
- Aurora Villafuerte

Interagency Committees -

Cooley Dickinson Hospital
- Mary A. Maher, Chairman
- Jane Nicholson, Secretary
- Mary Condron
- Karen Johnson

Springfield Hospital
- Mary A. Maher, Chairman
- Mary Helming, Secretary
- Loretta Sharp
- E. Ann Sheridan

Wesson Maternity Hospital
- Mary A. Maher, Chairman
- Edith Walker, Secretary
- Gellestrina DiMaggio
- Martha Newman
- Ruth Smith

Northampton State Hospital
- Mary A. Maher, Chairman
- Helen Whitbeck, Secretary
- May Hall
- Charlotte Hoglund

Wesson Memorial Hospital
- Mary A. Maher, Chairman
- Karen Johnson, Secretary
- Elizabeth Clarke
- Elaine LaMonica
- Jane Nicholson

Springfield Health Department and V.N.A. of Springfield
- Mary A. Maher, Chairman
- Bettye Frederic, Secretary
- Ruth Smith
- Constance Petrunenko
- Edith Walker

Administrative Coordinators
- Springfield Clinical Division: Mary Helming
- Student Health Program: Constance Petrunenko

Other Committees and Councils of the School -

Advisory Council to the Dean
Mary A. Maher, Chairman
Charlene Phelps, Secretary
Elizabeth Clarke
Gellestrina DiMaggio
Virginia Earles
Alice Friedman
Mary Helming
Loretta Sharp
Ann Sheridan

Committee on Graduate Education in Nursing
Virginia Earles, Chairman
Gellestrina DiMaggio
Mary Helming
May Hall
Anne Lee
Mary A. Maher
Loretta Sharp

Faculty Advisory Personnel Committee
Gellestrina DiMaggio, Chairman (Fall Semester)
Ann Sheridan, Co-Chairman
Loretta Sharp, Secretary
Elizabeth Clarke
Virginia Earles
Alice Friedman
Mary Helming
Karen Johnson

ATTENDANCE AT PROFESSIONAL MEETINGS

Date	Meeting	Place	Member(s) Attending
9/29/67	Mass. Mental Health Assn.	Boston, Mass.	May B. Hall
9/27/67	Mass. Dept. of Public Health Institution	Springfield, Mass.	Helen Whitbeck Constance Petrunenko Ruth Smith Edith Walker
10/6-8/67	Western Reserve School of Nursing. Symposium: Toward Defining a Theory of Nursing	Cleveland, Ohio	Benita Martocchio
10/5/67	Annual Meeting Mass. Nurses Assn. District I	Chicopee, Mass. Westover AFB	Elizabeth Clarke Alice Friedman Mary Helming Karen Johnson Benita Martocchio Derry Moritz Constance Petrunenko Charlene Phelps Dorothy Sexton
10/19-20/67	Massachusetts Nurses Assn. Biennial Meeting	Boston, Mass.	Elizabeth Clarke Alice Friedman Mary Helming Mary A. Maher Derry Moritz Benita Martocchio Martha Newman Charlene Phelps
10/19/67	Massachusetts Nurses Assn. Clinical Sessions	Boston, Mass.	Dorothy Sexton
10/27-28/67	Professional Schools & World Affairs, sponsored by the N.E. Center for Higher Education of E.W.A.	Manchester, New Hampshire	Martha Newman
11/14-16/67	Council of Member Agencies, Baccalaureate and Higher Degree Programs, N.L.N.	Las Vegas, Nevada	Virginia Earles
11/27-12/1/67	Univ. of California School of Nursing, San Francisco Workshop, Innovations in Curriculum Design	San Francisco, California	Charlene Phelps
12/6/67	Massachusetts League for Nursing Annual Meeting	Boston, Mass.	May Hall Charlotte Hoglund Constance Petrunenko Ruth Smith Helen Whitbeck

12/17/67	N.E. Council on Higher Education in Nursing Annual Meeting	Boston, Mass.	Elizabeth Clarke Gellestrina DiMaggio Mary Helming
12/21/67	Joint Meeting on Recruitment - M.N.A. and N.L.N.	Boston, Mass.	Alice Friedman
1/17/68 3/15/68 4/26/68	M.N.A. District I Program Meetings - - - - - - - - -	Granby, Mass. Springfield, Mass. Granby, Mass.	Elizabeth Clarke Alice Friedman Karen Johnson
1/23/68	National Foundation Genetics & Birth Defects	Boston, Mass.	Constance Petrunenko Ruth Smith Ann Sheridan Edith Walker
3/20/68	Sigma Theta Tau Annual Meeting	Boston, Mass.	Dorothy Sexton
3/26-29/68	N.L.N. Council of Member Agencies Baccalaureate and Higher Degree Programs	Cleveland, Ohio	Ruth Smith Edith Walker
4/1/68	Area Health Planning Council		Constance Petrunenko
4/4/68	Child Study Assn. of America Annual Meeting	New York City	Martha Newman Ann Sheridan
4/13/68	Mass. Nurses Assn. & Mass. Pharmacy Assn. Institute	Chicopee, Mass.	Mary Condron
4/25/68	Mass. Nurses Assn. "Changes in Nursing Education"	So. Lee, Mass.	Derry Moritz Martha Newman Alice Norman Dorothy Sexton
4/18-20/68	American Population Association	Boston, Mass.	Anne Lee
4/25/68	Mass. Public Health Assn. Annual Meeting	Brighton, Mass.	Alice Friedman Constance Petrunenko Ruth Smith
5/2/68	Assessment in Nursing Care Workshop - Faye McCain, Professor, Univ. of Michigan	Amherst, Mass.	All Faculty Members
5/8/68	Mass. Sociological Meeting	Amherst, Mass.	Anne Lee
5/8-12/68	American Assn. of Child Care in Hospitals Institute	Cleveland, Ohio	Ann Sheridan

5/13-17/68	American Nurses Assn. Biennial Convention	Dallas, Texas	Mary Helming
5/23/68	N.E. Public Health Assn. Annual Meeting	Meridan, Connecticut	Constance Petrunenko Ruth Smith
6/18/68	American Orthopsychiatric Association Annual Meeting	Chicago, Illinois	Loretta Sharp
6/23-28/68	N.E. Council on Higher Education in Nursing	Lenox, Mass.	All Faculty except Mary Helming Ruth Smith Elizabeth Clarke

UNIVERSITY OF MASSACHUSETTS
School of Nursing

MEMORANDUM

From: The Advisory Council to the Dean

To: Dr. Soutter, Mr. Stockwell, and Provost Tippo

Subject: Report on Concerns Regarding Future Relationships of the University of Massachusetts School of Nursing and the University of Massachusetts Medical Center, Worcester, Massachusetts

I. Introduction:

In 1965, the Board of Trustees of the University of Massachusetts decided to locate the proposed Medical School and Teaching Hospital in Worcester, Massachusetts. This geographic location has raised many concerns regarding the future development of academic programs in the paramedical areas and in particular for the existing programs of the School of Nursing located at the University of Massachusetts in Amherst.

To date, there has been a hiatus of planning in regard to future relationships of the School of Nursing and the Medical Center due to the time interval before the teaching hospital will be completed and the need for sound curriculum revision within the School of Nursing. The Dean and her Advisory Council feel that the many ramifications of the development of the Teaching Hospital and the Medical Center at Worcester needs to be examined and some type of plan must be developed to enhance the educational goals of all programs involved, those currently in existence, and those that will be demanded in the future.

II. Factors Related to Preparation of People for the Health Professions:

Medical and health care of the public has been revolutionized in the past half century. The practice of effective medicine today and tomorrow requires the participation of a large number of personnel both technical and professional. The demands of the public for comprehensive health care on a long term basis are increasing in astounding proportions. The physicians and the public are aware that the patients' best interest requires the services of many specialists both medical and paramedical.

It would seem therefore, that the same impetus which impelled the Commonwealth of Massachusetts to decide to provide an educational program for physicians will be equally strong for providing for preparation of all the other personnel needed to make viable health care programs possible. As the pressure for development of academic programs for the health professions such as social work, nursing, physiotherapy, occupational therapy, speech therapy, mounts the same basic decisions will arise concerning each. These questions pertain to their respective relationships to the Teaching Hospital and Medical Center in Worcester and the University. The problem arises because each of these health professions needs the influence and resources of a strong arts and sciences college. At the same time each will need the opportunity to learn and practice the professional role with other professionals within a service program which demonstrates the best ways of delivering services to people. The lack of this latter factor is the greyest weakness of our current program in nursing.

Current trends in the preparation for practitioners in the health professions across the country are placing emphasis on the opportunity for all such students to learn and practice together during their educational programs. This can be done through three main avenues:

1. Sharing courses in the basic sciences.

2. Joint participation in courses with professional orientation pertinent to practitioners in several fields.

3. Joint participation of the students in the various health professions in clinical activities so that specific role, role relationships, and joint methods of planning become an integral part of the students' academic program.

In view of the above considerations, it is recommended THAT AN EDUCATIONAL COUNCIL OR AN ADMINISTRATIVE BODY BE SET UP AT THE OUTSET TO PROVIDE FOR EDUCATIONAL PLANNING FOR ALL HEALTH PROFESSIONS WITHIN THE UNIVERSITY STRUCTURE. Such a body would of course need to recognize the autonomy of the various programs but could at the same time provide for co-ordination in many areas such as:

1. Sharing of courses.

2. Providing clinical activities for students to practice together.

3. Planning and use of library facilities on the University campus and at the Medical Center.

4. Planning and co-ordination of research activities.

5. Flexible use of faculties.

6. Sharing of transportation between campus and the Medical Center.

7. Joint use of audio-visual and mass media communication facilities for all students; i.e., closed circuit television.

8. Maintaining control over the quality of their respective service programs in the University Hospital.

III. Needs of the School of Nursing in Relation to the Medical Center:

The School of Nursing at the University of Massachusetts is growing rapidly. The total enrollment rose from 113 in 1962 to 286 in 1967, 153%. Within the next two years, the School will outgrow its present clinical facilities in terms of quantity alone. Its need for additional clinical facilities with respect to quality is long standing. The students today in the School of Nursing have yet to see co-ordinated comprehensive health care in action. They do not see any real models of professional practice. They have practically no opportunity to be involved in and see ongoing research. Despite the general excellence of the program, this remains its major weakness. The faculty of the School of Nursing has long awaited the advent of the Medical Center which would provide a means for remedying the situation. With the placement of the Medical Center at a distance, the solution of the problem is made more difficult than was anticipated. The faculty feels that it would be unwise to give up the many positive attributes of its present location on a large, dynamic campus with its excellent

support in the arts and sciences. In other words, it would be folly to strengthen one part of the program at the expense of another.

It is recommended therefore, THAT THE FACILITIES OF THE MEDICAL CENTER BE MADE FREELY AVAILABLE TO THE SCHOOL OF NURSING OF THE UNIVERSITY OF MASSACHUSETTS FOR BOTH THE UNDERGRADUATE AND GRADUATE PROGRAMS. The faculty of the School of Nursing would in its curriculum deliberations try to build a curriculum which would provide opportunities for certain experiences at the Medical Center. This would require flexible transportation and housing arrangements. The faculty would like to select experiences in the Medical Center which could be intensified in terms of time to make such plans feasible. Experiences such as intense acute care, coronary care, neurosurgical care, participation in clinical research units, could be planned in such a way that students could stay at the Medical Center for varying lengths of time to accomplish their goals. Other more long term experiences in rehabilitation, chronic out-patient care and the like may also be possible. At the same time certain kinds of student experiences could be planned on a long term basis in the Western Massachusetts area; i.e., fundamentals of nursing, public health nursing, maternity, family studies, and the like.

The faculty feels that the nursing students need the opportunity for experiences in the Medical Center for the following reasons:

1. to observe and work with other professional workers

2. to see true professional practitioners in their own field

3. to observe and participate in health care programs in which all health care services are available and brought to bear on patient problems

4. to care for a broader gamut of patients and patients representing more complex problems than those available in a community hospital (i.e., heart surgery, organ transplants, etc.)

5. to intensify experience with certain kinds of patients (i.e., in a community hospital a student may see one neurosurgical patient in several years; in a Medical Center she could care for several in one week)

6. to carry out investigative projects requiring patients and extensive library facilities not otherwise available

7. to participate in, observe, and appreciate the necessity for ongoing continuous research.

<u>Graduate Students</u>:

The School of Nursing has started a graduate program in Medical-Surgical Nursing. It is hoped that graduate programs in other clinical areas may be started soon. The faculty believes that it has an obligation to offer graduate education in nursing. The quality of the undergraduate program is greatly enhanced by a vital and challenging graduate program. The success of such graduate programs in nursing depends greatly on having the medical center available to the graduate student. The graduate program depends to a great extent on having ample clinical material, full library facilities and the opportunity to work in ongoing research programs.

[illegible]

[illegible]

[illegible]

IV. School of Nursing Faculty:

In order for the School of Nursing to grow in stature and quality, the faculty has certain needs which can only be met in a medical center. Faculties of schools of nursing can no longer rest on the laurels of their past preparation. Most prospective faculty will be looking for locations where they will have the opportunity to continue to enhance their clinical expertise, to continue to study clinical data, to work with other related professions and to carry on independent research. It will be impossible to compete for high caliber faculty without such opportunities. This will be especially true regarding faculty for graduate programs.

It is recommended THAT THE FACULTY OF THE SCHOOL OF NURSING HAVE CLINICAL APPOINTMENTS IN THE MEDICAL CENTER TO MAKE IT POSSIBLE FOR THEM TO:

1. give care to patients
2. do investigations and research
3. participate in ongoing educational programs
4. consult with the nursing staff and others
5. generally be involved in all programs of the medical center

V. Program and Facilities of the Medical Center:

Since the Medical Center is primarily for educational purposes, steps should be taken to insure that all service programs of the Center be of a quality and nature that enhances the educational objectives. Most experienced personnel in the field have all too vivid recollections of medical centers in which the service programs are lagging far behind the educational expectations of the faculty. The other area in which trouble has occurred is that of having various groups change service programs unilaterally at the expense of one or the other of the educational programs. The implication here is that the entire program (as well as medical) should be determined by the educational body. The policy body mentioned under II should have authority over this area. In the meantime, it is recommended THAT THERE BE AN ADVISORY GROUP OF THE FACULTY OF THE SCHOOL OF NURSING TO DETERMINE MATTERS RELEVANT TO NURSING CARE AND PRACTICE WITHIN THE MEDICAL CENTER UNTIL MORE FORMAL ORGANIZATIONAL PATTERNS ARE SET UP. It is of utmost importance to the future of nursing in the Commonwealth of Massachusetts that the nursing program of this facility be outstanding, and of a nature that a whole new concept of professional nursing may be demonstrated.

Since there is an obvious problem of distance and transportation it is recommended THAT PLANS BE MADE FOR:

1. rapid flexible transportation between the University and the Medical Center
2. extensive use of closed circuit television between the Medical Center and related units on the Amherst Campus.

This would bring much clinical material to personnel and students on the campus. For instance, a nursing faculty member could demonstrate the care of an open heart surgical patient by television. In fact, creative use of closed circuit television may be one of the most important advances towards unifying the University campus and the Medical Center.

Summary of Recommendations:

1. That there be an advisory group of the faculty of the School of Nursing to determine matters relevant to nursing care and practice within the University Hospital of the Medical Center.

2. That the facilities of the University Hospital and Medical Center be made freely available to the School of Nursing of the University of Massachusetts for both the undergraduate and graduate programs.

3. That the faculty of the School of Nursing have clinical appointments in the Medical Center to make it possible for them to:

   a. give care to patients

   b. do investigation and research

   c. participate in ongoing educational programs

   d. consult with the nursing staff and others

   e. be involved in all programs of the Medical Center

4. That plans be made for:

   a. rapid flexible transportation between the University and the Medical Center

   b. extensive use of closed circuit television between the Medical Center and related units on the Amherst campus

5. That an educational council or administrative body be set up at the outset to provide for educational planning for all health professions within the University.

UNIVERSITY OF MASSACHUSETTS
School of Nursing

PROGRAM SEQUENCE

FIRST YEAR

1st Semester	Credit	2nd Semester	Credit
English 111, English Composition	2	English 112, English Composition	2
Chemistry 111, General	3	Chemistry 112, General	3
Sociology 101, Introduction	3	Psychology 101, General	3
Speech 101, Oral Communication*	2	Zoology 101, Introduction	3
Nursing 100, Introduction*	3	Speech 101, Oral Communication*	2
Elective**	3	Nursing 100, Introduction*	3
General Physical Education	0	Elective**	3
		General Physical Education	0

* May be taken either semester.
** Elective chosen from: History, Government, or Economics. Students wishing to elect a foreign language may do so providing the basic requirement of the six elective credits indicated above is fulfilled prior to graduation. If a language is elected, intermediate proficiency is required.

SECOND YEAR

1st Semester	Credit	2nd Semester	Credit
English 125, Masterpieces of Western Literature	3	English 126, Masterpieces of Western Literature	3
Microbiology 140, introductory	3	Biochemistry 120, Introduction to Biochemistry	4
Microbiology 141, Laboratory	1	Zoology 138, Human Anatomy and Physiology	4
Zoology 137, Human Anatomy and Physiology	4	HD 380, Human Development in the Family	3
FN 141, Nutrition and Food	3	Nursing 111, Fundamentals of Nursing	3
Nursing 110, Fundamentals of Nursing	3	General Physical Education	0
General Physical Education	0		

THIRD YEAR

1st Semester	Credit	2nd Semester	Credit
Nursing 200, Nursing of the Child and Adult	7	Nursing 210, Nursing of the Child and Adult	7
Nursing 201, Nursing of the Child and Adult	7	Nursing 211, Nursing of the Child and Adult	7
Elective*	3	Elective*	3

* There is an upperdivision elective requirement of twelve credits, of which a minimum of six credits shall be in the Behavioral Sciences and three credits in the Humanities.

FOURTH YEAR*

1st Semester	Credit	2nd Semester	Credit
Nursing 300, Maternal and Infant Nursing	7	Nursing 302, Psychiatric-Mental Health Nursing	7
Nursing 301, Nursing in the Community	7	Nursing 303, Administration of Nursing Care	7
Nursing 390, Professional Foundations of Nursing	2	Nursing 391, Senior Seminar	2
Elective**	3	Elective**	3

* Clinical nursing courses listed will be taken during first or second semester, depending on clinical rotation of individual student.

** See notation on electives under Junior Year.

September, 1967

Recommendation of the Study on Nursing Education in the Commonwealth of Massachusetts, Mass. Board of Higher Education (1968)*

1. Development of a System of Nursing Education

2. Expansion of Graduate Preparation in Nursing

3. Establishment of Additional Baccalaureate Nursing Programs

4. Development of New Methods to Assist "R. N. students" Obtain a Baccalaureate Degree

5. Development of Procedures to Increase Nursing Faculties

6. Temporary Delay in the Establishment of New Nursing Programs of less than the Baccalaureate Level.

7. Improvement of Recruitment, Application and Admission Procedures

8. Initiating Community Planning for Nursing Students

9. Development of New Transfer Policies and Procedures Between the Community and State Colleges

*The complete Report, Study of Nursing Education in the Commonwealth of Massachusetts is available from the Board of Higher Education, Boston, Mass.

ANNUAL REPORT
SCHOOL OF PHYSICAL EDUCATION
June 1968

1. Appropriations

Account/Year	1965-1966	1966-1967	1967-1968
03	$31,300	$35,900	$30,000
06	7,400	4,000	3,000
07	7,000	8,000	9,500
09	3,000	-0-	-0-
10	5,100	5,200	4,200
11	200	44	-0-
12	4,600	8,350	7,395
13	28,100	25,000	21,000
14	3,500	3,500	3,500
14-1	6,000	8,000	19,000
15	4,000	6,500	6,500
16	200	300	300

2. Personnel[1]

	1965-1966	1966-1967	1967-1968
Dean	1	1	1
Associate Dean	0	1	1
Assistant Dean	1	0	0
Department Head	2	2	2
Professor	5	5	6
Associate Professor	6	6	8
Assistant Professor	7	7	8
Instructor	12	14	11
Part-Time Instructor	1	1	1
Assistant Athletic Dir.	1	1	1
Head Coach	2	2	2
Intramural Dir.	1	1	1
Asst. Football Coach	2	2	5
Athletic Coach	4	4	5
Asst. Athletic Coach	3	3	2
Financial Manager of Athletics[2]	1	1	1
Sports Information Dir.[2]	1	1	1
Asst. Sports Information Dir.[2]	1	1	1
Ticket Manager[2]	0	1	1

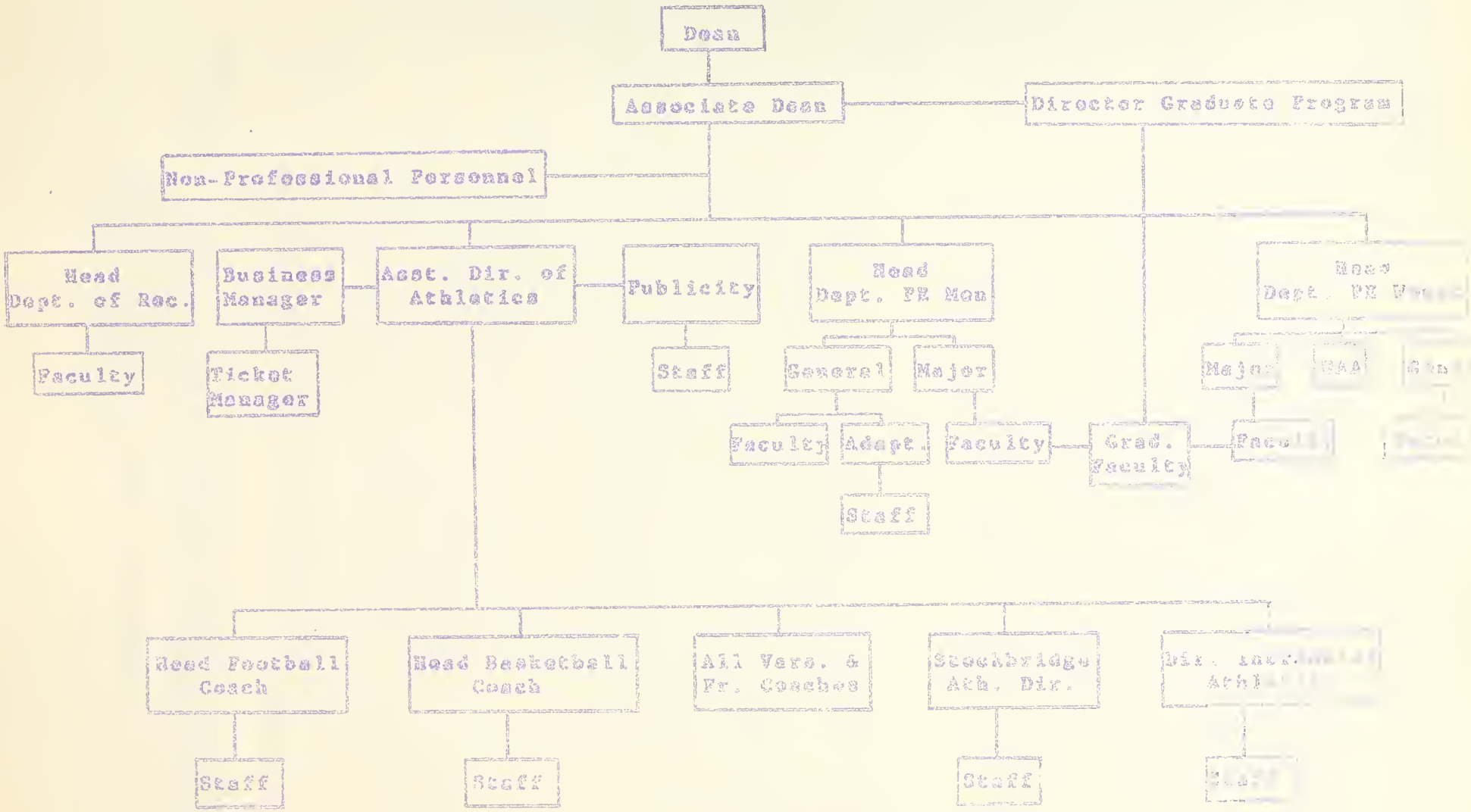
3. Organization Chart for 1968-1969 - see attached chart.

4. Students or clientele served[1]

	Sept. 1965	Sept. 1966	Sept. 1967
Number of Graduate Students	23	44	38
Number of Undergraduate Majors	380	489	602
Number of Students Taught	6520	7411	7665
Athletic Team Membership	736	770	792
Intramural Participation	3275	3239	3923

[1]See Appendix for Departmental breakdown.

[2]Paid from Athletic Trust Funds


Dean
Associate Dean
Director Graduate Program
Non-Professional Personnel
Head Dept. of Rec.
Business Manager
Asst. Dir. of Athletics
Publicity
Head Dept. PE Men
Faculty
Ticket Manager
Staff
General
Major
Faculty
Adapt.
Faculty
Grad. Faculty
Staff
Head Football Coach
Head Basketball Coach
All Vars. & Fr. Coaches
Stockbridge Ath. Dir.
Staff
Staff
Staff

5. Faculty publications, research grants and other professional activities.

a. Books:

Bischoff, David C. (contributing author). College and University Facilities Guide. Chicago: The Athletic Institute, 1968

Cobb, Justin. Creative Play Through Games. Bennington, Vermont: Broad Brook Press, Inc., 1968.

Randall, William E., Natural History of, and Significant Sites in, The Connecticut River Basin: A Study for the National Park Service.

Ricci, Benjamin. Physiological Basis of Human Performance. Philadelphia: Lea & Febiger, Publishers, 1967, 299 pps.

Vendien, C. Lynn and John E. Nixon. The World Today in Health, Physical Education and Recreation. Englewood Cliffs, N.J., Prentice Hall, 1968.

b. Articles:

Hubbard, E. Vickery. Psychological Implications of Competition. Proceedings of the Fall Conference, HAPECW, New Paltz, N.Y., Oct. 28-30, 1966, 22-29, bibliography.

Hubbard, E. Vickery. What Research Tells us about the Function of Kinesthesis in Visual Perception. Part I. HAPECW Newsletter, Winter, 1967, 10-16, bibliography.

Kjeldsen, Kirsti. Conditioning and Discipline in Gymnastics, DGWS Gymnastics Guide, 1967-1969.

Kjeldsen, Kirsti. Compulsory Exercises. Beginning Uneven Parallel Bars. DGWS Gymnastics Guide. 1967-1969.

Kroll, Walter. "Reliability Theory and Research Decision in Selection of a Criterion Score." Research Quarterly. 38: 412-419, 1967.

_____. "Recovery Patterns After Local Muscular Fatigue for Different Levels of Isometric Strength." Arbeitsphysiologie. 23: 331-339, 1967.

_____. "Isometric Fatigue Curves under Varied Intertrial Recuperative Periods." Research Quarterly. 39: 106-115, 1968.

Lewis, Guy M. "America's First Intercollegiate Sport: The Regattas from 1852 to 1876." Research Quarterly. 38: 637-48, 1967.

_____. "The Ladies Walked and Walked." Sports Illustrated. 27: 83-84, December 18, 1967.

VanderZwaag, Harold. "A Practical Approach Toward Research." The Physical Educator. 24: 119-120, 1967.

Wallace, Esther M. "Fear and the Non-Swimmer." AAHPER Aquatic Guide, 1967-69, 18-20.

c. Reviews:

Plagenhoef, Stanley. Review of Gymnastics for Men: a Competitive Approach for Teacher and Coach by Eric Hughes. Choice. (1967), 477 p.

_____. Review of A Beginner's Book of Gymnastics by Barry L. Johnson. Choice. (1967), 121 p.

_____. Review of Physiology of Exercise by Laurence E. Morehouse. Choice. (1967), 322 p.

_____. Review of The Science of Movement by E. A. R. and B. J. K. Tricker. Choice. (1967), 284 p.

_____. Review of Tennis Observed; the USLTA Men's Singles Champions, 1881-1966 by Bill Talbert and Peter Antheln. Choice. (1967), 142 p.

VanderZwaag, Harold. Review of Perspectives and Principles for Physical Education by Janet Felshin. Choice. 4:12 (February, 1968) p. 1411

d. Papers presented:

Bischoff, David C., "Curriculum Implications for International Understanding through Physical Education." EDA Annual Conference. March, 1968.

Randall, William E., "Preserving and Maintaining the Environmental Integrity of Hiking Trails." New England Trail Conference. March, 1968.

Randall, William E., "Extended and Year-round Use of Organized Camp Facilities." American Camping Association Convention. March, 1968.

e. Professional Activities:

Department faculty were represented at the following conferences during the year:

American Camping Association
Association of Interpretive Naturalists
Massachusetts Recreation & Park Society
National Forum on Preparing Tomorrow's Park, Recreation & Conservation Leaders
National Recreation & Park Congress
New England Camping Association
New England District Park & Recreation Conference
American Assoc. for Health, Physical Education and Recreation
Eastern Assoc. for Physical Education of College Women
Massachusetts Assoc. for Health, Physical Education and Recreation
National College Physical Education Association for Men
Eastern District Assoc. for Health, Physical Education and Recreation
International Academy of Aquatic Art
Perceptual-Motor Symposium
International Conference for Health, Physical Education and Recreation

f. Research Grants:

Walter Kroll Faculty Research Grant FR-P12-68 titled "Quality of Simple Reaction Time and the Psychological Refractory Period." Grant approved by the Public Health Service of the U.S. Dept. of Health, Education, and Welfare titled "Proprioceptive Effects in Isometric Muscular Effort."

Guy Lewis Faculty Research Grant titled "Sporting Clubs in Eighteenth Century America."

Stanley Plagenhoef Grant from Soccer Coaches Association titled "Study of Kicking in Soccer and Football."

Maida Rings School of Physical Education Grant - "A Study of the Effects of Two Methods of Teaching Physical Education."

6. Major Accomplishments

a. Department of Athletics

1. Intramurals

Participation in the Men's Intramural program is growing at a faster pace than the overall growth of the male student body. The program is a diversified one encompassing 16 activities. Active individual participations in these activities totals 25,816 male students. This figure represents an increase of 28% over the previous year. It breaks down to an increase in individual participations of 26% in team sports, and 55% in individual sports. The favorites among team sports are Touch Football, Basketball and Soccer. Leading in appeal in individual sports are Wrestling, Tennis Singles and Swimming. Other activities included in the program were Bowling, Volleyball, Softball, Tug-of-War, Cross Country, Handball, Squash, Badminton, Horse Shoes and Tennis Mixed Doubles.

Most impressive is the fact that 2 out of every 3 male students on campus now actively participate in the Intramural Program.

2. Intercollegiate Athletics

Yankee Conference championships were won by our varsity basketball, football and tennis teams during the past year. In total Yankee Conference championship play, which involves the six New England land-grant Universities, the University of Massachusetts finished either first, second, or third in all of the nine sports recognized by the Conference for championship competition. This remarkable record resulted in the University retaining the Frank W. Keaney Trophy; symbolic of overall Yankee Conference supremacy; for the fourth straight year. The University also fared well outside the Yankee Conference. The varsity ski team won the New England Intercollegiate Ski Conference championship for the first time in the eighteen years the League has been in existence. The varsity lacrosse team posted its best winning percentage in its fifteen year history - only a 6-5 loss to undefeated Amherst College prevented a Division Championship. It is particularly noteworthy that eleven of the sixteen sports in which the University formally coupetes enjoyed a winning season during the past year.

The Massachusetts-Dartmouth Football game was televised as the New England Regional "game-of-the-week" by the American Broadcasting Company. The Massachusetts-Yale Basketball game was televised as the Eastern College Athletic Conference "game-of-the week."

Most successful clinics were conducted on campus by our baseball and football coaching staffs. In addition, our varsity head coaches in basketball, football and wrestling served as guest lecturers in clinics held off campus.

b. Department of Physical Education for Men

1. Studied the entire General Physical Education Program.
2. Worked toward major revision of the Undergraduate Professional Program.
3. Offered an increased number of co-educational courses in the General Physical Education Program and developed considerably more articulation with the Department of Physical Education for Women.

4. Added to the overall academic climate of the Department through addition of new faculty members.

c. Department of Physical Education for Women

1. General Program

The WoPE General Program is made up of carefully planned and progressively more challenging activities focusing on the development, use, and movement of the whole body. There is constant striving to give the woman student the opportunity to develop the ability to use her body effectively in the performance of all tasks demanded of it, including activities she may pursue for the purpose of recreational enjoyment. The department believes that co-ed activities enhance the program from both the instructor's and the student's point of view. The department has added selections to the previous co-ed offerings in cooperation with the Men's Department of Physical Education. Total of 98 coeducational sections were offered. Also, in an effort to expand opportunities for students to select activities appropriate to their skill level, activities beyond the beginning level were available. In order to accommodate advanced levels of skill, membership on women's varsity squads may satisfy up to two quarters of the WoPE 000 requirement. Approximately 35 students took advantage of this opportunity.

2. Undergraduate Professional Program

The Department is proud of the major students who through their individual scholastic achievement have brought recognition to the department. Four women graduated Magna Cum Laude and four, Cum Laude. Majors have been selected for Phi Kappa Phi, Mortar Board, Departmental Honors, Scrolls and Alpha Lambda Delta. The growth in a quality program is evident by the campus-wide recognition of these students.

d. Department of Recreation

1. Major enrollment has continued to increase as the revised curriculum continues to be phased into full implementation. At the same time the calibre of majors is improving in comparison to the total University student body.

2. The state of Connecticut has joined Rhode Island and Vermont in making the recreation curriculum here available to its residents under the Regional Student Program.

3. Approval was realized for a new Master's Degree program in Regional Planning, under the Department of Landscape Architecture, with which the Department of Recreation will be cooperatively involved.

e. Graduate Program

Two new areas of concentration, Motor Integration and Sports History, were incorporated into the graduate program during the report year while a third area, Biomechanics, was reinforced. These changes represent a significant improvement in the quality of our Master's Program which is easily recognized by three new faculty members, seven new courses and two new teaching/research laboratories.

The increase in our graduate faculty from six to ten members is directly related to our major accomplishment for the subject period. For the first time in the history of the School of Physical Education it was possible and appropriate to provide four graduate faculty members with research time for their personal research projects. The specialized nature of the research interests of our faculty made it possible to permit our graduate students to select, for the first time, a thesis chairman relative to a mutual interest criterion, which we look upon as a distinct improvement in the quality of our graduate program.

7. Special Projects or Programs

a. Athletic Department

Our campus and facilities were used for making two athletic training films: Coach Larry Briggs coordinated the details for making a Soccer Officials' training film, and Coach Victor Fusia and his staff, in collaboration with the Athletic Institute, made a film on Football Techniques which will be used nationally as a training aid by high schools and colleges.

b. Women's Physical Education

1. Major Council sponsored three guest speakers: Dr. Ann Jewett of the University of Wisconsin, Dr. Liselott Diem of the Sporthochschule, Cologne, Germany; and Miss Ruth Morison of I.N.Marsh, Liverpool, England.

2. Dance Education
Master lessons and guest artists were sponsored by the department or the Fine Arts Council. They were Erick Hawkins Company, Murray Louis Company, Dona Madola, and Gus Solomon. The dance concert group of the University had excellent reviews and was well received by the University community.

3. Gymnastic Workshop
A seminar gymnastics workshop was most successful and was repeated because of the many requests received by the department. It is hoped that workshops can again be offered by the department.

c. Graduate Program

The graduate faculty of our School met frequently during the report year for extended discussions concerning the program of study for the doctoral proposal we plan to submit in the near future. The yield from these sessions will form the basis for the doctoral proposal.

A visiting professor was utilized during the 1967 summer session for the first time in an effort to finish the course work of our graduate students with a seminar devoted to bridging the gap between a research oriented degree program and the vocational interests of the students. This experiment appeared to be quite successful.

8. Future Plans and Needs

a. Athletic Department The need for an artificial ice facility for use in intercollegiate Hockey, Intramurals, and free skating is most critical. Study is under way of site, financing, and program for a multi-use complex that would serve as a convocation and athletic center. This facility would accommodate Basketball and Hockey in the formal athletic program, and Handball, Squash, Fencing, and Weight Lifting in the intramural and free play programs.

b. Men's Physical Education Future plans call for continued study of both the General Physical Education Program and the Undergraduate Professional Program. This will require an increase in the number of well-qualified faculty members who can make a contribution primarily to either or both of these programs.

c. Women's Physical Education The most critical need for the Department continues to be the need for an addition to the Women's Gymnasium. This must be realized in the near future in order to maintain the excellent quality of instruction.

The General Program of Physical Education has been reviewed by a School Committee, and two innovations will be initiated next fall.

The Undergraduate Professional Program is under cooperative curriculum planning with the Men's Department.

The Women's Athletic Program will be revised next year. In keeping with the newly established Commission on Intercollegiate Athletics for Women, a department committee will establish guidelines for women's competitive athletics. The department hopes to give leadership to this growing women's program among the colleges of the Northeast.

d. Recreation Renovation and remodelling in Hicks Building continues to represent a major need, as does allocation of a classroom to the department for instruction.

During the coming year the next step in implementation of the revised curriculum will be realized. Offering of the senior accelerated block in both semesters will make available a degree of flexibility which has not been possible before.

A major need is for additional faculty. During the coming year this need is to be met by part-time personnel. With the addition of two doctorates a graduate program will become possible, which in turn is a pre-requisite for any federal funds which could become available to support such programs as recreation extension.

Funds in #15 account are still woefully inadequate to fulfill needs for instructional equipment.

e. Graduate Program The School of Physical Education plans to continue to offer the Master of Science degree to both men and women. Every effort will be made to improve this degree program each year. In addition, we are in the final planning stages in the development of a program of studies leading to a Ph.D. degree with a major emphasis in physical education. Both endeavors will require continued support from the administration in terms of new faculty, additional courses, expanded library holdings, and additional research equipment.

APPENDIX

Personnel by Department

1. Department of Physical Education for Men

	1965-66	1966-67	1967-68
Department Head	1	1	1
Professor	4	4	5
Associate Professor	1	1	3
Assistant Professor	3	3	2*
Instructor	6	7	6

2. Department of Physical Education for Women

	1965-66	1966-67	1967-68
Department Head	1	1	1
Associate Professor	4	4	4
Assistant Professor	5	4	6
Instructor	4	5	3
Part-Time Instructor	1	1	1

3. Department of Recreation

	1965-66	1966-67	1967-68
Professor	1	1	1
Assistant Professor	0	0	0
Instructor	2	2	2

Students Served by Department

1. Department of Physical Education for Men

	1965-66	1966-67	1967-68
Majors	210	253	295
General Program	2600	3125	3499
Students Taught	3440	4137	4325

2. Department of Physical Education for Women

	1965-66	1966-67	1967-68
Majors	137	180	231
General Program	2277	2552	2595
Students Taught	2821	3064	3158

3. Department of Recreation

	1965-66	1966-67	1967-68
Majors	33	61	76
Students Taught	181	210	182

*One Assistant Professor on leave

DEPARTMENT OF THE AIR FORCE
DETACHMENT 370, AIR FORCE ROTC (AU)
UNIVERSITY OF MASSACHUSETTS, AMHERST, MASSACHUSETTS 01002

5 June 1968

ANNUAL REPORT OF THE DEPARTMENT OF AIR SCIENCE

1. APPROPRIATIONS - by fiscal year (FY)

		FY 66	FY 67	FY 68
01	Salaries, Permanent Positions	$ 9,649.00	$10,795.00	$11,674.00
02	Salaries, Other	1,831.00	-	-
03	Services, Non-Employees	200.00	200.00	200.00
04	Food for Persons	38.00	30.00	30.00
10	Travel & Automotive Expense	148.00	100.00	100.00
12	Repairs & Alterations	50.00	50.00	50.00
13	Special Supplies & Expenses	450.00	600.00	500.00
14	Office & Administrative Expenses	150.00	150.00	150.00
14-1	Telephone	900.00	750.00	500.00
	TOTALS	$13,416.00	$12,675.00	$13,204.00

2. PERSONNEL - as of September

	1965	1966	1967
Lt Colonel	1	1	0
Major	2	1	2
Captain	2	2	3
TSgt	3	3	3
SSgt	1	1	2
Principal Clerk (Grade 9)	0	1	1
Senior Clerk-Stenographer (Grade 7)	1	0	0
Military Property Clerk (Grade 5)	1	1	1
	11	10	12

3. ORGANIZATIONAL CHART - See Attachment #1.

4. STUDENTS OR CLIENTELE

a. Number of Majors -- None.

b. Number of students taught -- September

	1965	1966	1967
Air Science 1	302	315	137
Air Science 2	108	122	108
Air Science 3	57	60	38
Air Science 4	55	69	57
TOTALS	522	566	340

5. FACULTY PUBLICATIONS, RESEARCH GRANTS, RESEARCH PROJECTS, AND OTHER PROFESSIONAL ACTIVITIES -- None.

6. MAJOR ACCOMPLISHMENTS

a. Consistent with the mission of Air Force ROTC, which is that of commissioning career-minded officers to meet Air Force requirements through educational

programs on collegiate campuses, this department has commissioned 44 students for Fiscal Year 1968.

b. The Financial Assistance Program authorized by "The ROTC Vitalization Act of 1964," which provides for tuition, fees, and books for those students selected for the program, has been very successful. Following is the number of grants this department has received since Academic Year 1966/67:

Year	Number
Academic Year 66/67	7
Academic Year 67/68	9
Academic Year 68/69	10

c. Flight Instruction Program. Seventeen students successfully completed the Flight Instruction Program.

7. SPECIAL PROJECTS OR PROGRAMS

a. The Arnold Air Society, a cadet honor society, was very active during the past academic year. Their projects consisted of work with Boy Scouts, Civil Air Patrol, initiation of a high school visitation program, and ushering at all home football games.

b. The Flying Redmen Drill Team represented the University by participating in local community and area affairs.

8. FUTURE PLANS AND NEEDS

a. We are continually updating all areas of the Air Science curriculum. This is accomplished in conjunction with Headquarters AFROTC and is necessitated by the ever-changing technology of the aerospace age.

DAVID L. OAKES, Major, USAF
Professor of Air Science

1 Atch
Organizational Chart

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[illegible]	[illegible]
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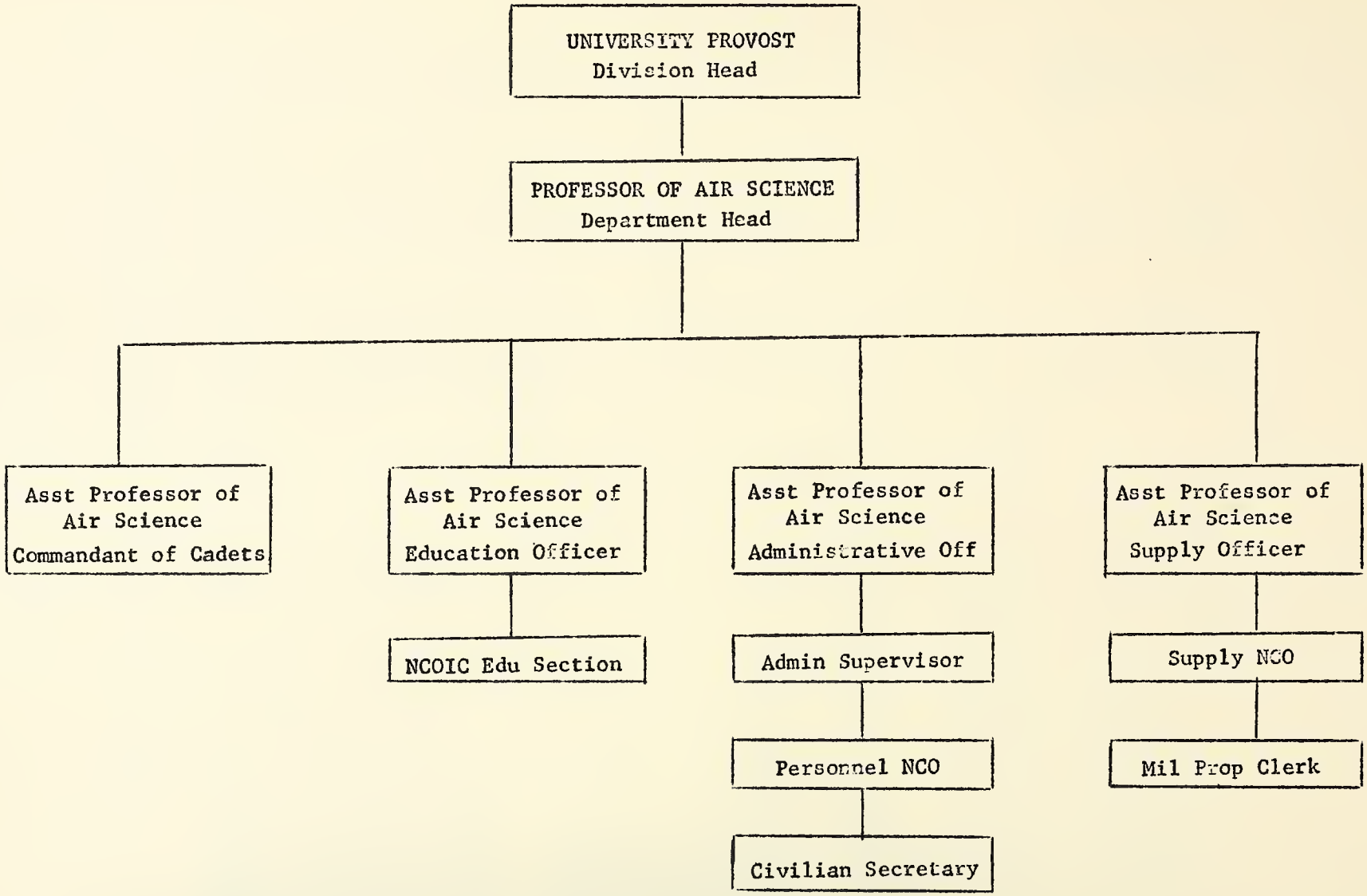

Attachment #1

DEPARTMENT OF THE ARMY
US ARMY ROTC INSTRUCTOR GROUP
UNIVERSITY OF MASSACHUSETTS
AMHERST, MASSACHUSETTS 01002

26 June 1968

ANNUAL REPORT OF THE DEPARTMENT OF MILITARY SCIENCE

1. APPROPRIATIONS - by fiscal year (FY):

		FY 1965-66	FY 1966-67	FY 1967-68
03	Service, non-employee	$ 200.00	$ 200.00	$ 200.00
04	Food for persons	37.00	40.00	40.00
06	Dry Cleaning	100.00	------	------
10	Travel & Automobile Expenses	87.00	75.00	75.00
12	Maintenance & Repairs	100.00	100.00	100.00
13	Special Supplies & Expenses	600.00	300.00	300.00
14	Office & Administrative Expenses	150.00	150.00	150.00
14-1	Telephone	900.00	800.00	900.00
15	Equipment	80.00	------	------
	TOTALS	$2,254.00	$1,665.00	$1,765.00

2. PERSONNEL - as of September

	1965	1966	1967
Colonel	1	1	1
Lieutenant Colonel	0	1	1
Major	1	0	1
Captains	3	3	2
Enlisted	5	4	4
Senior Clerk Grade 7	1	0	0
Principal Clerk Grade 9	0	1	1
Armorer Artificer Grade 5	1	1	1
	12	11	11

3. ORGANIZATIONAL CHART - See Inclosure 1.

4. STUDENTS:

a. Number of Majors: NONE

b. Number of students enrolled - September:

		1965	1966	1967
(1)	Freshmen	242	259	189
(2)	Sophomores	91	99	87
(3)	Juniors	65	73	54
(4)	Seniors	58	61	68
	TOTALS	456	492	398

5. FACULTY PUBLICATIONS, RESEARCH GRANTS, PROJECTS & PROFESSIONAL ACTIVITIES:

A normal personnel turnover was experienced during the year.

6. SPECIAL PROJECTS OR PROGRAMS.

a. The Army ROTC Rifle Team remained under the supervision of the military staff, and participated in postal matches with colleges and universities throughout the nation; a definite improvement was noted in that the team record was 8 wins and 3 losses as compared to 4 wins and 3 losses last year. With the large number of University teams in active competition, the five-point rifle range was in continuous use.

b. The Bay State Special Forces, a Recognized Student Organization, increased its activities during the past school year. The qualifications for selection remained unchanged as did the uniforms and equipment issued to members and the type of training conducted. Three week-end Field Training Exercises were held during the first semester, while one was conducted between semesters. The second semester found the Bay State Special Forces going on two F.T.X's including one at Fort Devens where they operated in conjunction with ROTC students from Massachusetts Institute of Technology. They also marched in the St. Patricks' Day Parade in Holyoke.

c. The Flying Redmen Drill Team was organized in the fall of 1967 to meet the needs of students from the University interested in precision drill. It is a Recognized Student Organization. Although the team consists mostly of Army and Air Force ROTC Cadets, other University students are also members of the team. Both military departments advise the University drill team. The drill team has performed in a number of activities this year, including a drill meet in New York City and the Pershing Rifles 12th Regimental Drill Meet in Boston, Mass.

d. The Precisionettes, the University all-women drill team, completed their third full year under the sponsorship of the Department of Military Science. Formerly a part of the University Band, the Precisionettes performed as an independent unit taking part in many varied activities during the school year. Included in these were the traditional half-time performance at football games and marching in Special parades such as the Holyoke St. Patrick's Day Parade and the University Homecoming Parade. The highlight of the year's activities was the Pershing Rifles 12th Regimental Drill Meet - Coed-Drill competition in Boston, Mass., where the Precisionettes took first place and the National Inter-collegiate Drill Competition in Washington, D. C. where the team took second place.

e. Major accomplishments during the year

As a result of the Department of Military Science Course Change Proposal which was submitted to the Academic Matters Committee of the Faculty Senate for approval in 1966; a Subcommittee on Military Studies was appointed to review all matters pertaining to the curriculum of the Military Departments including credits, new courses, and programs in order to insure compatability with normal University standards and to screen candidates for the various military departments.

6. e. continued

The professor of Military Science withdrew the 1966 Course Change Proposal due to a planned curriculum change in S.Y. 1970-71. This curriculum change, if adopted by the University, would require a new course proposal. Therefore, the PMS felt that a course change now would be a duplication of effort.

The Department of Military Science has cooperated with the Subcommittee on Military Studies and so far has furnished copies of text books, course syllabuses, and conducted a briefing on the present and proposed curriculums.

7. FUTURE PLANS AND NEEDS:

a. In addition to the loss of one officer and one non-commissioned officer in June 1968, this department anticipates the additional loss of two officers and one non-commissioned officer personnel prior to September 1968. Two additional enlisted personnel are scheduled to depart prior to November 1968. As of this date, two personnel (one officer and one non-commissioned officer) have been scheduled as replacements and are expected to arrive on or about 15 August 1968.

b. The Department of Army is now testing a new curriculum for ROTC that is expected to be ready for University consideration during SY 1968-69. The objectives of the new curriculum are to obtain regular academic credit for ROTC courses, to provide flexibility to permit ready adaptation to the needs of the various institutions offering ROTC and to fullfill the Army's requirement of preparing the cadet with those basic fundamentals required of a junior officer.

In brief, the new curriculum divides the Program into the Basic Course, Pre-professional training, and the Advanced Course, Professional training.

The objectives of each year of Military Science are as follows:

MS I - To acquaint the student with the principles and concepts of warfare and the problems of National Defense through a study of the developments in the History of War.

MS II - To examine the concepts of military force and its relative effectiveness in solving international problems; the role which military force plays in society and its relation to other elements of national power.

MS III - The thrust of education and training is directed towards military skills, operations and tactics necessary at company level and below. Advanced Summer Camp would be conducted between the Junior and Senior years. Summer Camp would provide practical field training and instruction in those subjects that cannot be taught on campus.

MS IV - Continues training in military operations at the battalion level, emphasizing command and staff functions of an Army Officer.

Delter B. Wiseman
DELTER B. WISEMAN
LTC, INFANTRY
ACTING PMS

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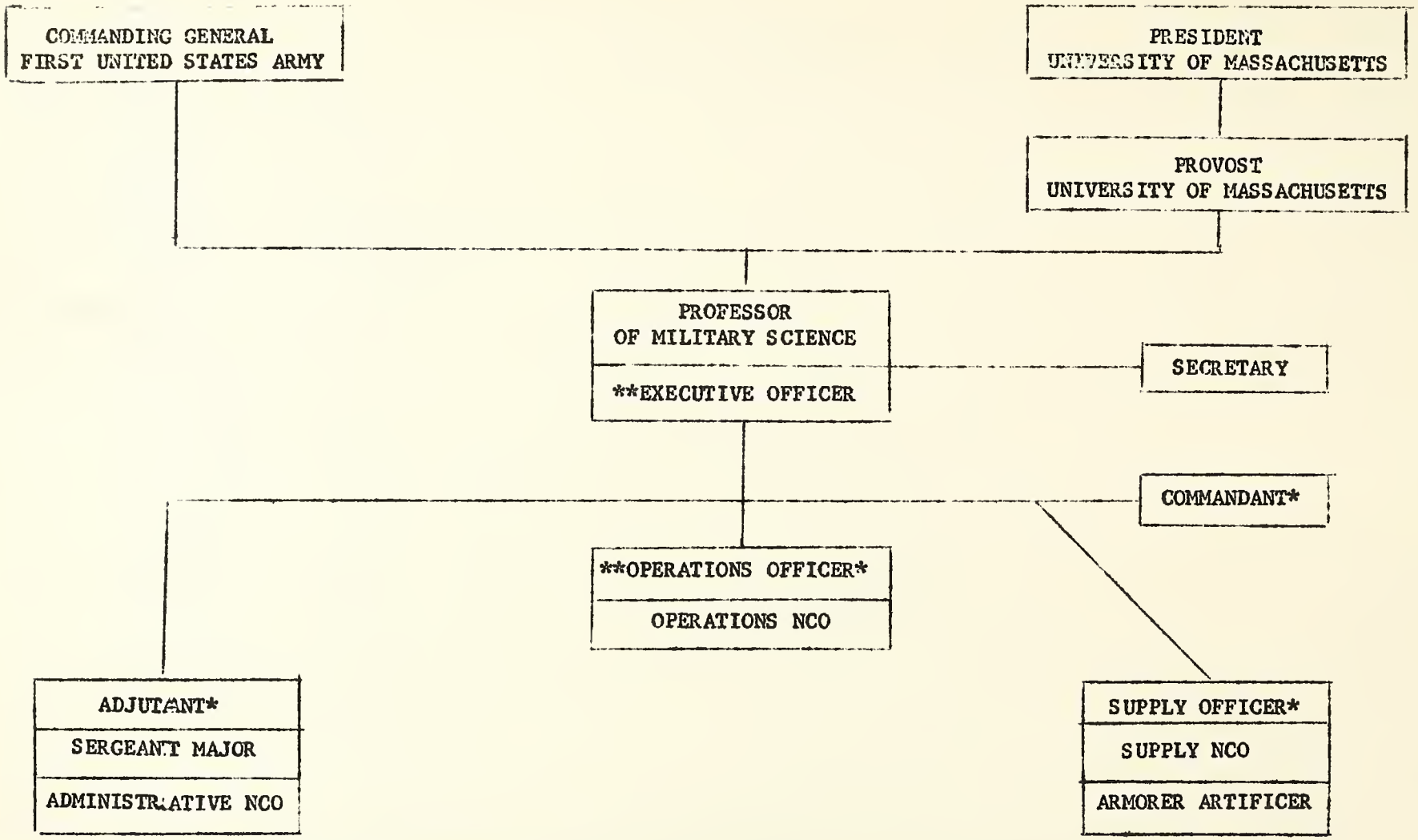
as



NOTES: * indicates full time instructors.
** indicates one officer with dual responsibility.

Inclosure 1 to Annual Report of the Department of Military Science

July 1, 1968

From: Graduate Office, Edward C. Moore, Dean

To: Mr. Robert McCartney, Secretary of the University

Subject: Annual Report, Fiscal 1968

This report covers the areas of activity for which the Graduate Dean is administratively responsible. These are:

S11 Graduate Office

S12 Computer Science Program

S13 Research Computing Center

S14 Water Resources Research Center

S15 University of Massachusetts Press

S16 Office of Research Services

S17 Polymer Science and Engineering

S18 Marine Sciences Program

Research Council

1) Annual Appropriations

	'66	'67	'68
Graduate School:			
Operating Budget	74,110	122,780	151,672
Research Council			
Faculty Research Grants	100,000	100,000	62,000
Faculty Growth Grants	20,000	20,000	23,000
Massachusetts Review	10,000	10,000	10,000
Research Computing Center	115,119	191,186	398,804
Computer Science Program	32,619	47,974	41,126
University of Mass. Press	75,000	75,000	110,000
Water Resources Research Center	87,500	87,500	120,000
Office of Research Services	37,336	42,500	83,046
Polymer Science and Engineering	--	38,638	44,480
TOTAL	551,684	735,578	1,044,128

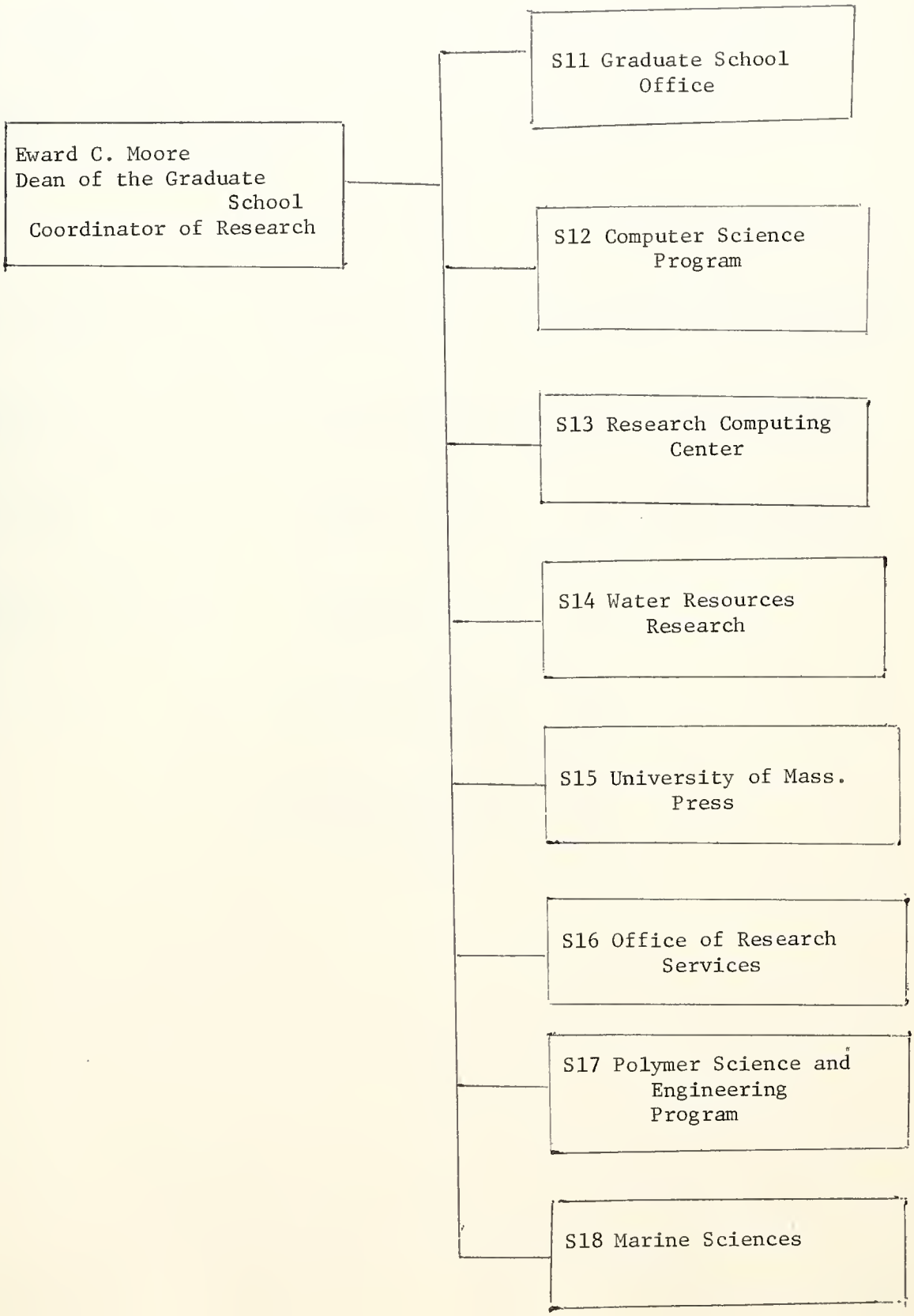
2) Personnel

	Sept. 1965	Sept. 1966	Sept. 1967
S11 Graduate Office			
Administrative	3	3	4
Clerical	9	12	11
S12 Computer Science Program	4	4	4
S13 Research Computing Center	14	17	22
S14 Water Resources Research Ctr.	2	3	4
S15 University of Mass. Press	4	5	5
S16 Office of Research Services	4	5	7
S17 Polymer Science and Engineering	-	2	5
TOTAL	40	51	62

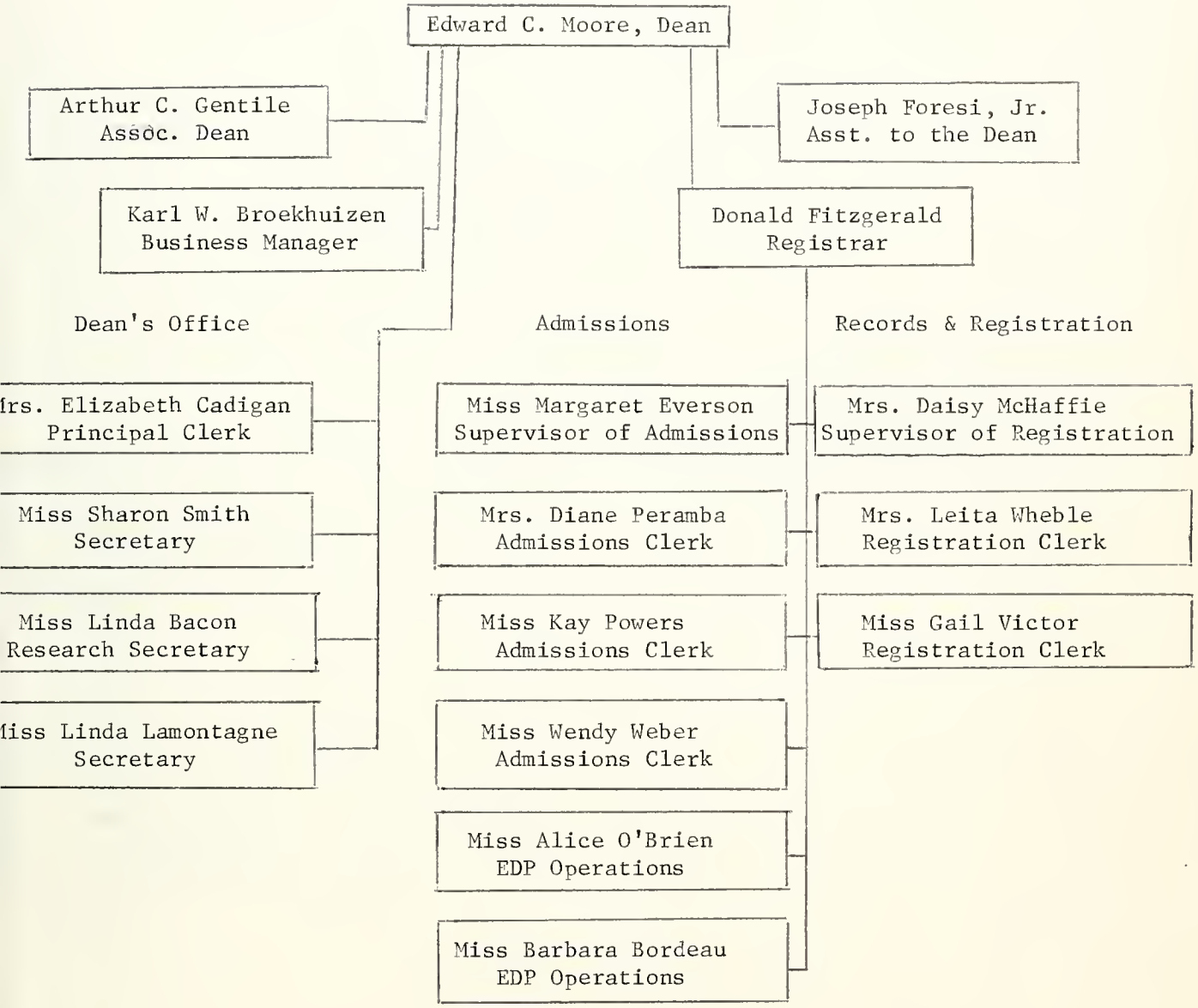
3) Graduate School Organization Chart

See Following Page

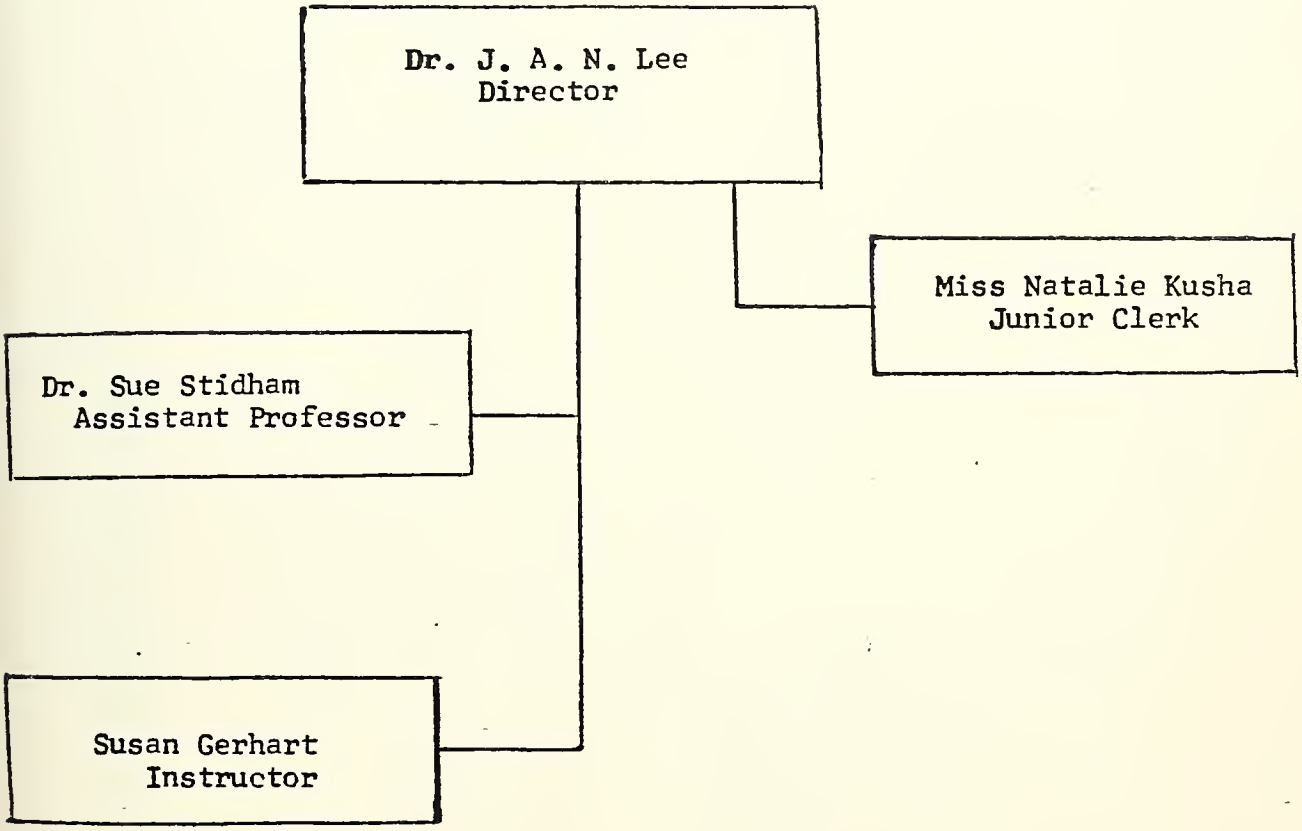
Graduate School Organization 1967 - 1968



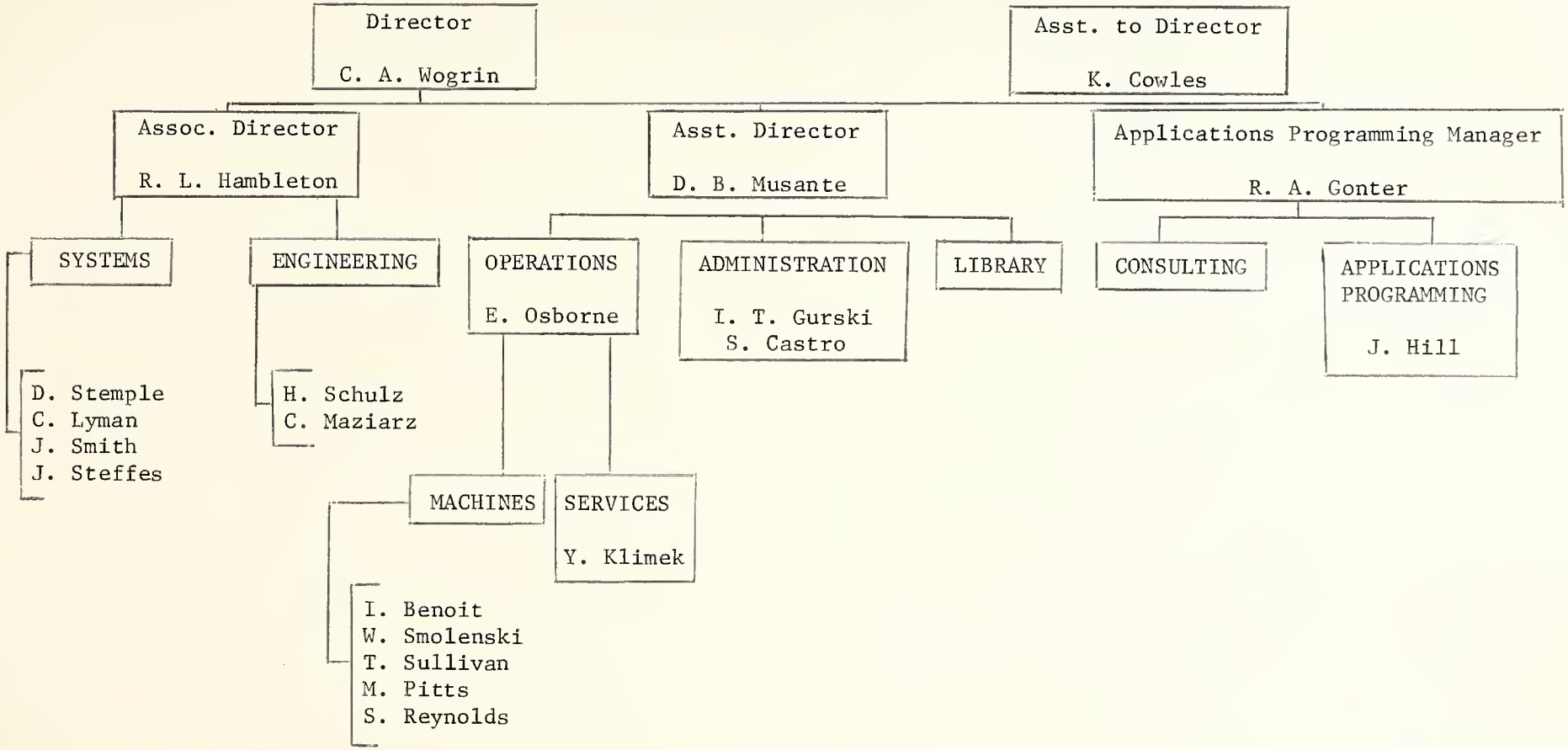
S11 - Graduate Office



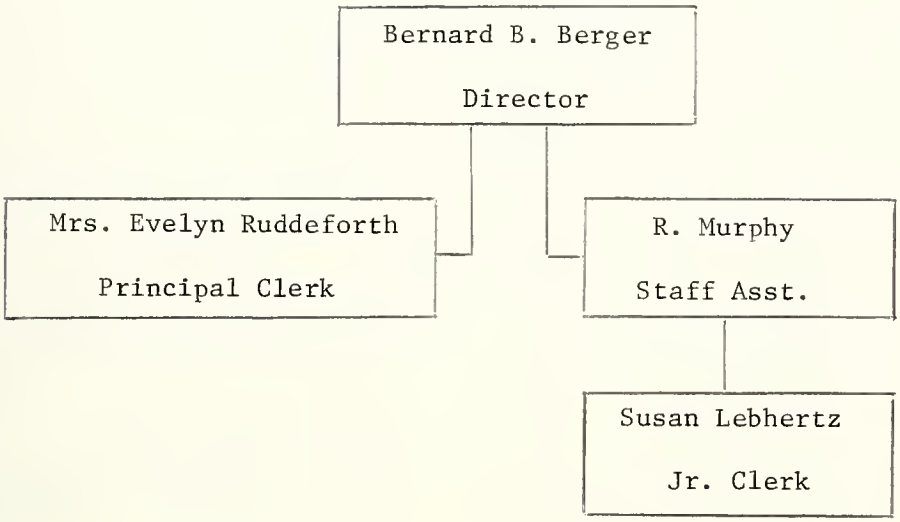
S12 Computer Science Program



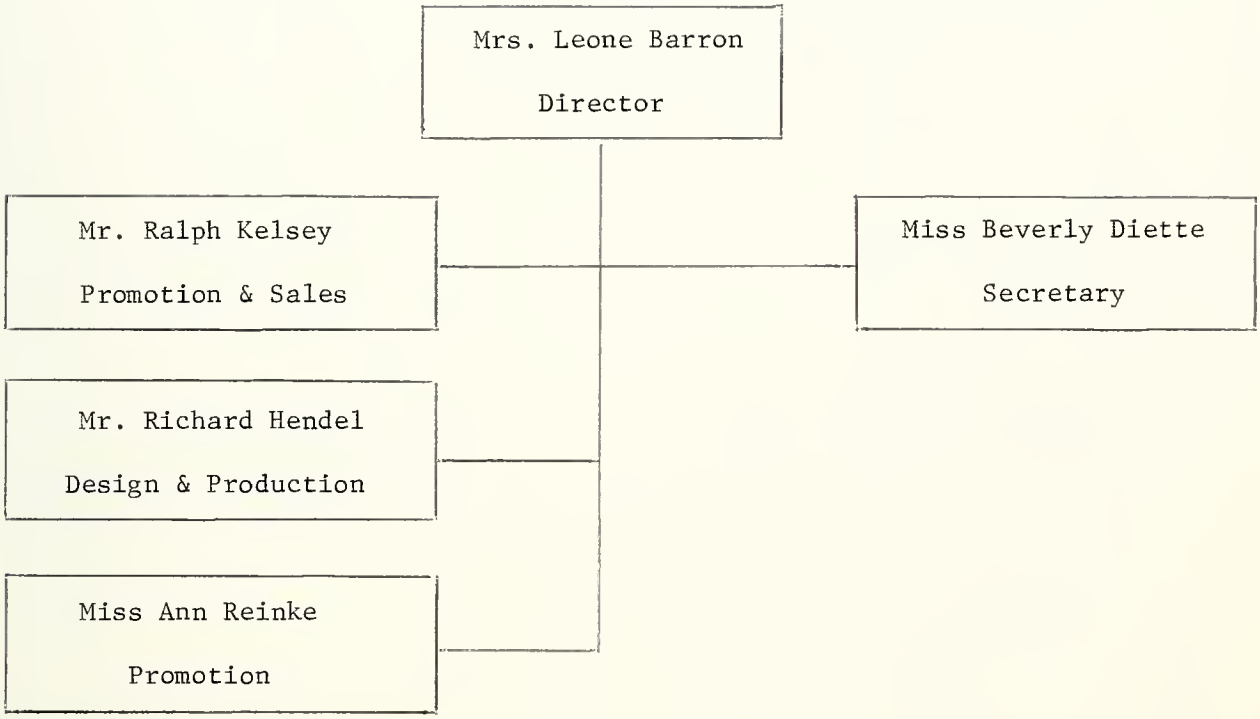
S13 RESEARCH COMPUTING CENTER



S14 Water Resources Research Center



S15 University of Massachusetts Press



S16 Office of Research Services

Glass Shop

Mr. Gordon Good
Glassblower

Mr. Larry Williams
Asst. Glassblower

Mr. Joseph Walas
Apprentice Glassblower

Micro-analysis Laboratory

Charles Meade
Chemical Analyst

Electronics Shop

Mr. Albert D. King
Electrician

Secretariat

Mrs. Andrea Bassignani
Typist

Mrs. Joyce Emerle
Typist

4) Students or clientele served in the various branches of this office area:

a) Graduate School:

Enrollment (fall)	65-66	66-67	67-68
	2240	2514	2835

Admissions Data	1966	1967	1968
Inquiries Received	15,552	15,889	16,631
Applications Processed	6,459	6,275	7,804
Accepted	3,788	3,681	4,372

b) Research Coordinator

	1966	1967	1968
Faculty Research Grants	156	168	160
Faculty Growth Grants	22	39	53
Sponsored Research Applications Processed	242	221	316
TOTAL	420	428	529

c) Office of Research Services

	Hours of Use			Number of Depts Served		
	'66	'67	'68	'66	'67	'68
Secretariat	755	2033	1969	19	20	22
Electronics Shop	1055	980	586	26	18	16
Glass Shop	1956	2403	2879	23	19	24
TOTAL	3766	5416	5434	68	57	62

d) Research Computer Center
Hours of Operation: 24 hours a day, six days a week.
Number of Users:

	1966	1967	1968
Students	1220	1670	2204
Faculty	400	450	456
TOTAL	1620	2120	2660

Number of Jobs Processed:	33,800	62,411	84,491
Projects served		345	620
Departments represented		37	41
Courses served		56	151

e) University of Massachusetts Press

Total dollar sales	$17,800	$34,108	$55,000

5) Major accomplishments:

a) During 1968 the Graduate program produced 71 Ph.D's and 558 Master's degrees.

The statistics for the last five years are:

	1964	1965	1966	1967	1968
Doctoral	27	36	48	69	71
Master's	229	279	419	507	558
	256	315	467	576	629

b) New doctoral programs were added in Comparative Literature, Environmental Engineering, and Anthropology. The addition of these programs brings the number of doctoral programs to 40.

c) New Master's programs were added in Comparative Literature and Environmental Engineering.

d) Once again we can report a significant increase in the number of Fellowships available to graduate students almost entirely through the support of the Federal government. State-supported fellowships showed a significant decrease for Fiscal Year 1968. The severe cut-back in Federal budgets we are now experiencing has created a critical situation in regard to graduate fellowships for 1968-69. The failure to develop state support for fellowships has been a serious problem in the past; it promises to be an even greater problem in the future.

Fellowships:	Federal	State	Industry	Total
1966	162	42	3	207
1967	225	46	21	292
1968	319	23	7	349

e) The research activity of the University for the past year is reflected in the following data:

Research Activity:

	Fiscal '67		Fiscal '68	
	Number of Grants	Amount of Income	Number of Grants	Amount of Income
External support				
Research grants	235	$2,016,575	279	$2,688,677
Training grants	16	232,968	20	516,477
Equipment grants	10	334,057	7	63,875
Facilities grants	5	1,836,615	1	2,000,000
Total	266	4,420,215	307	5,269,029
University support				
Faculty research grants	164	122,428	135	62,000
Faculty growth grants	20	20,000	23	23,000
Total	184	142,428	158	85,000
GRAND TOTAL	450	4,562,643	465	5,354,029

6) Special Projects and Programs

a. Computer Time-Sharing System

The UMASS computer time-sharing system went into operation on September 15, 1967. The system now provides 36 active terminals with 12 more waiting installation, and operates five and a half hours per day, five days per week. The computer center has issued 1,112 user numbers, indicating the great demand for this system and the significant contribution it is making to the research efforts of the University Faculty. It is anticipated that the time-sharing system will eventually expand to include 128 remote teletypes.

b. Marine Sciences Program

During fiscal 1968, the University of Massachusetts discussed an agreement with the United States Coast Guard for joint use of the Coast Guard Station in Gloucester, Massachusetts and a portion of the United States Coast Guard property on Plum Island. It is anticipated that as soon as the Coast Guard is able to relocate in Gloucester, they will vacate the present station, which will be available for full-time use by the marine scientists at the University. At present it is available for limited use by Faculty and Graduate Students in cooperation with the United States Coast Guard.

c. Graduate Research Center

Construction commenced on Phase I of the Graduate Research Center in the Spring of 1968, and the target date for the completion of Phase I is September 1970. The center will provide for excellent facilities for the Departments of Chemistry, Biochemistry, and Polymer Science and Engineering, and will house the University Press, the Water Resources Research Center,

the Computing Center, and the Graduate Office.

d. Research Services

A new research service was established during fiscal 1968. This service is a microanalytical laboratory and is operated by Mr. Charles Meade, an excellent analytical chemist who came to us from private industry. His services will be available to all departments. He provides accurate analysis of compounds, biological material, etc., for specific elements which they may contain. There is a small charge for this service, and it is anticipated that chemistry, biochemistry, and most of the biological sciences will find this a most useful and time-saving service. Mr. Meade is already working to capacity, and it is anticipated that this service will expand in the near future.

7) Future Plans

a. Computer Science

With a loss this year of three full-time faculty members and with one half-time faculty member on leave, the program in Computer Science will have the services of the equivalent of only four full-time staff members to handle a projected enrollment of 1,100 students. With the ever increasing enrollment and in order to avoid major cutbacks in the academic offerings of the Computer Science Program, it will be necessary to appoint two full-time faculty before the end of fiscal 1969.

b. University of Massachusetts Press

The list of titles published by the Press has grown to over 30 and the problem of book storage has become critical. During early fiscal 1969, it will be necessary to find adequate storage space for the books

published by the University Press.

c. Marine Sciences

Now that the Marine Sciences Program has a home, we must begin to plan for providing adequate facilities and equipment for the program. Until the Coast Guard vacates the station, it appears unlikely that we will be able to renovate the premises to provide for the needs of the Marine Science Program. However, during fiscal 1969 two very vital needs should be met:

1. The Marine Scientists should be provided with a small vessel which they can operate out of the station at Gloucester.

2. A search should be undertaken to find a full-time director for the Marine Science Program.

d. Computing Center

During fiscal 1969 the plans for the Research Computing Center are of a somewhat more imposing scale than they have been thus far, mainly as a result of the plan to rent another CDC 3600 with a 65K memory. This new configuration will be set up in conjunction with the current facilities which we now have and will provide the University with one of the largest Computing Centers on the Eastern Seaboard. With the present installation, the center operates at complete saturation. With the new configuration, we will be able to meet all terms for remote access system ports plus whatever batch jobs are required.

A further very important development that this addition provides is an opportunity to build a new milti-processing system. The hardware along with the personnel which we presently have and a few added positions will enable us to develop and implement a truly total information system for the University and the Commonwealth.

TO: Dean Edward C. Moore June 20, 1968

FROM: Computer Science

SUBJECT: Annual Report for 1967/68

1. Students or Clientele Served.

	1965/66	1966/67	1967/68
Appropriation	$24,850	-	-
Personnel	5	7 1/2	7 1/2*
No. of Majors	20	22	27
No. of Students	1200	1500	1000‡
No. of graduate students currently engaged in thesis research	1	1	8
No. of M. S. Degrees Conferred	1	0	2
Tools of Research Exam (fraction recommended for grade of "PASS")		93/125	131/177

*Full Time

J. A. N. Lee, Head
C. C. Foster, (on leave 1967/68)
S. N. Stidham
S. L. Gerhart
R. H. Hambleton
D. W. Stemple

Half Time

C. A. Wogrin, Director of Research Computing Center
R. R. Archer
F. D. Stockton

‡The decrease in this number over 1966/67 is the result of two factors:
a) Only 100 students could be accepted in 121 each half semester because of the shortage of teletypes.
b) Virtually all of the Computer Science students in the School of Business Administration were drained off from C.S. 121 to SBA 100.

Report of J. A. N. Lee

1. Courses Taught

Fall, 1967*	Computer Science 790	15 graduates
Spring, 1968*	Computer Science 787	13 graduates

2. Publications

November, 1967	Author and editor, Research Computing Center, UMASS User's Manual.
November, 1967	Author, "The Anatomy of a Compiler" Reinhold Publishing Company, New York.
February, 1968	Contributor, "University Education in Computing Science", ACM Monograph Series, A. Finerman (Editor), Academic Press, New York, January 1968.

Research Grant

The principal investigator of National Science Foundation grant (GJ-60) to the University -- for two years -- $39,667.00 June 1968. "Syntax Directed Translation in a Time Shared System".

Professional Activities

Proposal referee for the National Science Foundation.

Reviewer for the Association for Computing Machinery.

Chairman of Master's thesis committee for James H. Burrill (completed May, 1968).

Institutional representative for UMASS Student Chapter of ACM.

Member of ASA Committee on Programming Languages X3.4.2C2 on PL/I.

Member of X3.4.2C on Formal Definition of Languages.

Conferences Attended

November, 1967	University of Kansas, "Standardization of Languages".
November/December 1967	Oak Ridge, Tennessee, Conference on Information Engineering sponsored by Oak Ridge Associated Universities, Incorporated.

December, 1967	San Francisco, California - COMMON User's Group meeting. Gave paper entitled "Current Research Toward the Standardization and Formal Definition of PL/I".
January, 1968	Pittsburgh, Pennsylvania - Paper entitled "Syntax Oriented Translator with Particular Respect to SYNFUL".
February, 1968	Kingston, Rhode Island - Paper entitled "Computer Design".
April/May, 1968	Atlantic City, New Jersey - Spring Joint Computer Conference.
June, 1968	Calgary, Alberta, Canada - Canadian Linguistic Association and Computer Science Association of the University of Calgary. Gave talk and television program entitled "The Recognition & Use of Null Elements in A Syntax Directed Translator".
June, 1968	Kingston, Ontario, Canada - Computer Society of Canada, 6th National Conference.
June, 1968	New York - Conference and course on the theory of programming and syntactical analysis.

Papers Presented

November, 1967	Kansas City, "Standardization of Languages".
December, 1967	San Francisco, "Current Research Towards the Standardization & Formal Definition of PL/I".
	UMASS Technical Note: Publication No. TN CS 00001
June, 1968	Calgary, Alberta, "The Recognition & Use of Null Elements in a Syntax Directed Translator".
January, 1968	Pittsburgh, "Syntax Oriented Translator with Particular Respect to SYNFUL
February, 1968	Kingston, "Computer Design".

Report of S. N. Stidham

1. Courses Taught

Fall, 1967	Computer Science 150	6 undergraduates
	Computer Science 409	60 graduates
Spring, 1968	Computer Science 121	5 undergraduates
	Computer Science 409	50 graduates
	Computer Science 710	21 undergrad/graduates

2. Publications

Designed and edited the brochure describing the Master's Degree Program for the Computer Science Program.

Development of a new course, Computer Science 150 (Algorithmic Methods).

Research Grants

Work has begun on phase 2 of a computer model of the internal field effects in a dielectric medium, with specific applications to solid polymers. Supported by UMASS Computer Research Grant, $2250.

Professional Activities

ACM Special Interest Committee - Digital Simulation.

Faculty Advisor to Pioneer Valley Student Chapter of the Association for Computing Machinery.

Conferences Attended

April	Atlantic City, New Jersey - Professional Development Seminar in Digital Simulation of Physical Systems.
April/May	Atlantic City, New Jersey - Spring Joint Computer Conference.
May	Hartford, Connecticut - First Statistical Meteorological Conference.
June	Kingston, Ontario - Computer Society of Canada, 6th National Conference.

Report of S. L. Gerhart

1. Courses Taught

Fall, 1967	Computer Science 122	20 undergraduates
	Computer Science 211/511	4 undergrad/graduates
Spring, 1968	Computer Science 131	62 undergrad/graduates
	Computer Science 712	7 graduates

2. Research Grant

Investigator on National Science Foundation Grant (GJ-60) with Dr. J. Lee, "Syntax Directed Translation in a Time Shared System".

Conferences Attended

August, 1967 — Toronto - Attended Research conference sponsored by the Computer Science Association of Canada at the University of Toronto.

Report of D. W. Stemple

1. Courses Taught

Fall, 1967	Computer Science 223/523	30 undergrad/graduates

2. Research Grant

Investigator on National Science Foundation Grant (GJ-60) with Dr. J. Lee, "Syntax Directed Translation in a Time Shared System".

Research Project

Initiated the study of statistical research project on the behavior of the time-sharing systems.

Conferences Attended

December, 1967	ACM Symposium on Computer in Urban Affairs.

Report of R. R. Archer

1. Courses Taught

Fall, 1967	No Computer Science courses.	
Spring, 1968	Computer Science 252/552	22 undergrad/graduates

2. Research Grants

The principal investigator of National Science Foundation Grant (NK-1856) to the University -- December, 1967 to August, 1968, $16,700. "Nonlinear Statics and Dynamics of Their Elastic Shells".

Professional Activities

Member of Committee on Publications and sponsor for plates and shells for Journal of Applied Mechanics.

Chairman of Master's thesis committee for Ke C. Shih (completed May, 1968)

Chairman of Master's thesis committees for Gusta Berstein and Yuan jen Tung.

Conferences Attended

August, 1967	10th Midwestern Mechanics Conference Colorado State University. Paper, "Vibrations of Spherical Shells Including Transueric Normal Stress Effects".
November, 1967	Pittsburgh, ASME annual meeting. Member of Committee on Publications and sponsor for plates and shells for Journal of Applied Mechanics.

Papers

Referee of papers for Journal of Applied Mechanics, ASME; Engineering Mechanics Journal, ASCE; American Institute of Aero & Astronautics Journal; Society of Industrial and Applied Math Journal.

Proposal referee for the National Science Foundation.

Report of F. D. Stockton

1. Courses Taught

Fall, 1967	Computer Science 251/551	36 undergrad/graduates
Spring, 1968	Computer Science 753	4 graduates

2. Research Project

Summer, 1967. Final report on Federal Water Pollution Control Contract #1412-7.

Study to predict the additional water demands of the Connecticut River in order to keep the minimum dissolved oxygen at or above a prescribed minimum.

Report of C. A. Wogrin

1. Courses Taught

Fall, 1967	Computer Science 270/570	18 undergrad/graduates
Spring, 1968	Computer Science 790	7 graduates

2. Publications

To be published.	"Output Probability Density Function of Linear Devices with Non-Gaussion Random Inputs" with H. Rudin and P. M. Schultheiss. Presented at Hawaii International Conference, Honolulu, Hawaii. To be published in proceedings of the conference.

Research Grant

The principal investigator of National Science Foundation grant (GW-2768) to the University (June 24 - August 1968). Summer Institute Engineering Concepts Curriculum "Man Made World".

Professional Activities

Consultant - NASA Goddard Space Flight Center, Information Processing Division.

Steering Committee, New England Computer Program.

Lectures Presented

September, 1967	Department of Psychology, Univ. of Mass.
October, 1967	Plant & Soil Science Seminar, Univ. of Mass.
November, 1967	Department of Statistics Colloquim, Univ. of Mass.
November, 1967	"APL as a System Design Language" presented at seminar on Higher Order Languages, NASA Goddard Space Flight Center. Panel member of discussion on Higher Order Languages at same meeting.
February, 1968	Freshman Engineering Seminar, Univ. of Mass.
March, 1968	Pittsburgh, "Algorithms for Dynamics Utilization of Storage" Computer Science Colloquim, University of Pittsburgh.

March, 1968	School of Engineering Seminar, Univ. of Mass.
April, 1968	Springfield, Mass. "Time-Sharing Use of Computers". Springfield Section IEEE.
April, 1968	WFCR Radio Broadcast Hybrid Computer Computation Seminar.

3. Major Accomplishments

Computer Science Laboratory

The most important accomplishment of the year was the establishment of a Computer Science Laboratory, housed in Room 112 of the East Wing of the Engineering Building. The laboratory currently contains a PDP-1 computer and peripheral equipment on lease from Bolt, Beranek & Newman, industrial consultants of Cambridge, Massachusetts.

The laboratory is being supported, in part, by laboratory fees paid by students in Computer Science courses.

Computer Science 121

The "Basic FORTRAN" course has been somewhat expanded to cover two languages -- BASIC (Beginner's All-Purpose Symbolic Instruction Code) and UMASS Fast FORTRAN. The students have been using the UMASS time-sharing system exclusively.

Degrees Awarded

The second and third Master's degrees in Computer Science were awarded at the June, 1968 commencement to:

James H. Burrill
"Syntax Oriented Formatting and Checking of Responses in a Computer Assisted Instruction Language".

Thesis supervisor: Dr. J. A. N. Lee

Ke Chiang Shih
"A Character Recognition Algorithm for Alphabetic and Numeric Characters Using Moments".

Thesis supervisor: Dr. R. R. Archer

New and Revised Courses

One new and one revised course has been developed and has been given a provisional listing on the Fall schedule of courses.

Computer Science 132 Survey of Computer Applications

Computer Science 250 550 Computational Modeling (revised C.S. 150)

4. Special Projects

ACM and Computer Science Guest Lecturers

Conrad Wogrin (University of Massachusetts)

Gerald Weeg (University of Iowa)

Arthur Kahn (General Electric)

Jean Sammet (IBM)

John Laski (Cornell University and Imperial College, London)

Ian Thomas (University of Massachusetts)

Robert Hambleton (University of Massachusetts)

Robert Mallary (University of Massachusetts)

Carl Farrington (TRW)

James Burrill (University of Massachusetts)

5. Future Plans and Needs

With the loss this year of three full-time faculty members (Miss Gerhart, Messrs. Hambleton and Stemple) and with one half time faculty member (Dr. Archer) going on leave, the program will have the services of the equivalent of only four full time staff members to handle a projected enrollment of 1100 students. With an ever increasing enrollment of graduate students from this program and other departments, additional faculty help is needed to maintain the undergraduate curriculum. In order to avoid major cutbacks in the academic offerings of the Computer Science Program, it will

be necessary to hire two full-time faculty before the end of the fiscal 1968/69.

Teletypes

The large increase in the number of students using the UMASS time-sharing system has resulted in the formation of large queues waiting for access to a teletype. Since the situation is almost certain to deteriorate in the coming year admission to the larger undergraduate courses will have to be restricted unless at least 10 additional teletypes can be obtained.

Space

The establishment of the laboratory has removed one of the two classrooms that were under the jurisdiction of the Computer Science Program.

RESEARCH COMPUTING CENTER

Annual Report

Fiscal 1968

SUMMARY

1. OPERATIONAL EXPENSES AND INCOME

a. Sources:	Computer Trust Fund	$217,700	
	State Funds	89,800	
	Institutional Allow. Acct.	36,000	
	Constr. for Teaching & Res. Fac.	23,800	
	NSF GU 2272 Contingencies	2,825	
		370,125	
b. Expenses:	Personnel	234,300	
	Rentals and Equipment	95,100	
	Supplies and Maintenance	33,542	
	Miscellaneous	7,183	
		370,125	
c. Income:	Computer Trust Fund		
	User Fees and Sale of Supplies		$76,826.58
	State Funds - Acct. 13		
	Sale of Supplies		2,385.38
			$79,211.96
d. Total Billing for Computer Time		$690,000	

2. BATCH SYSTEM USAGE

a. Total Number of Accounts			620
Accounts by type:	Faculty	236	
	Student	185	
	Course	151	
	Administration	22	
	Other	29	
b. Academic Departments Served			41
Total Number of Students Served			2,389
Total Number of Faculty Served			572
c. Number of Jobs Run under DRUM SCOPE			84,491
(Fiscal 1967 - 62,411)			
(Fiscal 1966 - 33,800)			
d. Hours of Productive Computer Use			5,744.8 hrs.

3. UMASS TIME-SHARING SYSTEM, in operation September 15, 1967
Operates 5.5 hours per day, 5 days per week.

Hours of Productive Time-Sharing Use	947 hrs.
User Numbers Issued	1,112
Active Terminals	36
Average Time per Sign-on	27.3 mins.
Average Number of runs per Sign-on	5.5
Average CPU time per run	3.2 secs.
Average Number of runs per hour	276.5
Average Number of runs per port per hour	12.1
Average Number of active ports	22.8

4. APPLICATION SERVICE

Programming hours for users	943
Faculty members served	18
Administrative and Staff members served	7
Complete programs written	22
Hours of programming for library and utility programs	601
Programs or routines written	9
Programs tested or debugged	10

RESEARCH COMPUTING CENTER

ANNUAL REPORT

1968

NTRODUCTION

The fiscal year 1968 saw a continuing growth in the Research Computing Center oth in the service requested and the service offered. The number of customers, faculty, tudents and administrative, increased and the total dollar receipts for service increased y 85 percent. The initiation of the UMASS Time-Sharing system has been received well y some users of the Center but became an inconvenience to others. The introduction of he Applications Programming Service has provided a considerable service to persons equiring competent professional assistance in preparation of programs. Not anticipated vas a job load which saturated the facility in the later parts of the year.

The statistics pertaining to the operation of the Center are collected at the end of his report and are self explanatory. The body of the report will concern itself with spects of the Center not presentable in terms of charts, graphs, or tables.

. Operations and Service

Starting in September the UMASS Time-Sharing system was put in operation. At hat time a time schedule was established which was followed during the remainder of the ear.

Weekdays Monday through Friday

Midnight - 7:30 a.m.	Drum SCOPE
:30 a.m. - 8:00 a.m.	Accounting
:00 a.m. - 8:30 a.m.	Maintainance
:30 a.m. - 1:30 p.m.	Drum SCOPE
:30 p.m. - 5:30 p.m.	UMASS (Time-sharing)
:30 p.m. - 8:00 p.m.	Drum SCOPE
:00 p.m. - 9:30 p.m.	UMASS
:30 p.m. - 12:00 Midnight	DRUM SCOPE
	SATURDAY
:00 a.m. - 6:00 p.m.	DRUM SCOPE
	SUNDAY
:00 a.m. - 6:00 p.m.	DRUM SCOPE

When the load demanded, the Center was operated on Saturday and Sunday evenings. These times occurred in April and May. During the month of April and the first half of May the job load for batch service reached saturation resulting in delays of over twenty hours in processing of work submitted. Whereas some users interpreted this as due to the five and one half hours per day devoted to the Time-Sharing service, it is well to point out that through the teletype machines there was an average of 1300 runs per day in this same period. The correct statement would be that without this UMASS system to absorb so much of the student load , the Center would not have been able to provide the service requested.

The limitations of our machine configuration became quite clear during this year. The facilities include a single printer, a single card reader, a single card punch and four

agnetic tape drives. As it so happened these pieces of equipment had numerous failures ring the year. Any one unit not operative will close down the computer operation. The ngle printer has another severe limitation. When the computing load is heavy, the output veloped exceeds the capacity of the printer. This in turn results in the halting of computer eration until the printing que can be cleared. A good part of the 1150 hours of idle time own in the Time Record in the appendix is due to this back-up and does not represent ne that was in effect available for processing additional work.

Improvements in the method of scheduling jobs into the machine could provide at ost a ten percent increase in machine capacity. Hence during the coming year we can ticipate from the study of the three year processing record that the machine will reach turation in July, November and the three month period, March through May. Some lief can perhaps be realized by requiring that all student and course usage be confined the UMASS system in order to take advantage of the proven efficiency of that system. his, however, would require an increase in the number of terminals available to udents.

The operations staff, under the direction of Everard Osbourne, performed very ell during the entire year. The new personnel as well as the old have improved their pabilities through continued training.

The engineering, under the direction of Mr. Hugh Schulz has had a demanding year. quipment difficulties were frequent but were corrected with dispatch. Mr. Clarence Maziarz, ho was hired in December, attended a six week school at the Control Data Corporation and is erforming well as a maintenance engineer.

Time-Sharing UMASS

The Time-Sharing system was placed in operation in the middle of September with eight public terminals, four private terminals and ten terminals in the teletype laboratory in the Research Computing Center. This service provided direct line connections from each terminal to a part on the machine.

The initial facility provided for entering programs from the terminals, from the keyboard, or from punched paper tapes. The disk storage was added in November, which then provided for saving programs to be fetched and run on command. During the entire year improvements were made and bugs detected and corrected so that by the end of the year the system was a flexible, responsive and reliable Time-Sharing system which compares favorably with any system developed to date. With this basis, design and development will continue.

The initial method of hard-wiring of terminals to a machine part had severe limitations. The New England Telephone Company, the supplier of the line through their cables, limited the data rate to less than seven characters per second in order to keep noise inductions in other wires in the same cables to a minimum. Extending the service off campus would require further leasing of wires dedicated to the system. This all led to an expensive and rather inflexible operation.

In March the system was connected to a data-set operation with all equipment external to the Center leased from the New England Telephone Company. This involved the installation of Bell System's new data station, the first such installation

in the country. At the same time the number of parts was increased to sixty-four, of which sixteen are hard wired to locations within the Computing Center, and forty-eight are connected to the telephone dial net works. Access to our computer is now available from any place in the country.

Records of the use of the system were not kept in a systematic manner until April. The data given in the summary are typical since April 1. It can be inferred from these data that the Time-Sharing system is very effecient in handling certain types of jobs. In particular the work connected with courses can be done more efficiently on the Time-Sharing system than on the batch system. In the coming year professors will be strongly urged to use the Time-Sharing system.

Applications Programming Service

1. General Information

The Applications Programming Service was established in September, 1967, under the direction of Mr. Robert Gonter. The results of the first year demonstrated that the service satisfies a definite need.

The manager of applications programming worked full time. Three graduate assistants have worked half-time as programmers. A full-time senior programmer was hired in May, 1968.

Work has involved planning and writing computer programs, debugging programs, documentation, setting up control cards and making computer runs to analyse data, advising and helping users with programming problems, training, and consultation.

In the next year, the amount of work is expected to double. With a full-time programmer and a more experienced staff the quality and quantity of work will be increased.

2. Work Summary

943 hours of programming done for users.

18 faculty members served

7 administrative and staff users served

22 complete programs written

601 hours of programming done for library and utility programs.

9 programs or routines written

10 programs tested or debugged

Staff

The staff size and organization remained unchanged except for the addition of the Applications Programming Service. Individual changes ded occur. Dr. Caxton Foster took a leave of absence to spend the year as a visiting professor at the University of Edinburgh, England. He was replaced in the directorship by Dr. Conrad A. Wogrin.

The position of Assistant Director for Administration was initially held by Mr. Donald Fitzgerlad. With his transfer in the fall to the Registrar of the Graduate School, Mr. David Musante was promoted to the position. Both men in their turn built the position into an effective part of the operation of the Computing Center.

Mr. Robert Hambleton, as Associate Director for System, inspired and led a small system programming staff through the initiation of the Time-Sharing service. His direction of this work has been an outstanding performance. His staff consisting of Mr. David Stemple, Miss Judy Smith, Mr John Steffes, and student assistants Mr. Louis Santoro and Mr. William Pouliot were themselves capable of responding creatively to this leadership and contributed immensely to the success of the project.

The staff as a whole performed extremely well all year. Their numbers are too small for the amount of work to be done, but by unselfish overtime work and deligence on the job most requirements for service were met.

Programs and Activities

In order to assist faculty members in the use of computers and to publicize the services available from the Center, the following programs were offered by the Center personnel:

FORTRAN Course for Faculty and Staff

Two, four week evening course, the first offered in February and the second in April. The course s were run by Mr. Robert Gonter and Miss Katy Cowles.

OTHER PROGRAMS

"UMASS" Time-Sharing Seminar for Community Colleges was held at the Research Computing Center on April 11, 1968. There was 38 representatives from the 12 Community Colleges in attendance. Presentation by R. C. C. staff.

"UMASS" Time-Sharing Seminar for other Mass. State Colleges was held at the R. C. C. on April 18. There was 7 representatives from the colleges in attendance. Presentation by the R. C. C. Staff.

"UMASS" Time-Sharing Seminar for State and County Legislators from the four Western Counties. Lunch at Lord Jeff, tour of Center and lecture by Dr, C. Wogrin, R. Hambleton, and J. Lee. Seven Reps. one Senator and nine County officials were in attendance. Event took place on May 24, 1968.

"UMASS" Time-Sharing System demonstrated by R. Hambleton and J. Smith on Channel 22 T. V. Show, Tome Colton's Western Mass. High Lites on May 8, 1968.

"UMASS" Time-Sharing System", a paper delivered by R. Hambleton at the CDC 3600 Coop meeting March 1968, Colorado Springs, Colorado.

REPORT OF C. A. WOGRIN

Publications

To be Published. "Output Probability Density Function of Linear Devices with Non-Gaussion Random Inputs" with H. Rudin and P. M. Schultheiss. Presented at Hawaii International Conference, Honolulu, Hawaii. To be published in proceedings of the conference.

Lectures Presented

"APL as a System Design Language" presented at seminar on Higher Order Languages, NASA Goddard Space Flight Center. Panel member of discussion on Higher Order Languages at same meeting. November, 1967.

Freshman Engineering Seminar, Univ. of Mass. February, 1968.

"Algorithms for Dynamics Utilization of Storage" Computer Science Colloquim, University of Pittsburgh. March, 1968.

"Time-Sharing Use of Computers". Springfield Section IEEE. Springfield, Mass. April, 1968.

Future Plans

The future of the Research Computing Center is encouraging for the opportunities at hand. The present hardware configuration has reached its maximal use and further developments will require, as minimum, another bank of core storage, additional disk, two more magnetic tape driver, and additional perepheral units such a sprinters, card readers and plotters. Even with this minimal addition it is not possible to attain a full background to the Time-Sharing system so that both Time-Sharing and batch operation could be provided for at least 18 hours a day.

At the time of the writing of this annual report it appears possible that a more extensive addition to the machine can be accomplished in the coming year. The ideal

would be the addition of two banks of memory, a second CPU, four magnetic tapes, additional disk storage, a second printer and card reader. This addition would provide for twenty hours or more of Time-Sharing full batch operation, continued operations when individual unit fails and this basic hardware for exciting new developments in computer systems. Whereas, with the present hardware we will not be able to meet the computing needs of the campus in the coming years, the enlargement of the system will see us through the next three years.

Regardless of hardware additions, the staff of the computing center must be enlarged. At its present size, the staff is not able to meet the current needs of the campus. With the indicated growth of computing, the campus will be severely hampered without more persons on the Center staff.

APPLICATIONS PROGRAMMING SERVICE

Programming for Faculty and Administration:

ipiro and Stein, Botany: Analysis of plant growth data for different parts of the plant with different treatments and over a period of time. For AEC. Plots could be made of selected data.

wards, Bureau of Government Research: Summarize and correlate demographic variables. PHS. Processing of Data included analysis of variance and factor analysis.

lmes, Shade Tree Labs: Prepared KWIC index for reprint file, and a program to prepare annual summary of diagnostic reports.

ckhart, Botany: Regression analysis program to analyse variables in stem stretching experiments.

Roche, Botany: Analysis of data related to plant growth.

wson, Forestry: Rewrite of 7090 FAP programs to FORTRAN for 3600.

dman, Government: Wrote Program to compare district judge decisions with appeals decisions, and a comparison of decisions of all appeals judges with each other.

x, student in Government: Analysis of a survey of student attitudes toward Viet Nam war.

dmont, Sociology: Analysis of data from a study of length of stay and patient attitudes in a hospital.

isley, Extension Service: Preparation of data for input to Federal Extension Management Information System.

rmichael, Polymer Service: Evaluation of functions and plotting of results.

vinger, Psychology: Program to select data and write on drum for analysis by several programs.

ine, Astronomy: Retrieval data from a magnetic tape made on a CDC 6400.

own, Agricultural Economics: Analysis of rail tariffs.

als, Admissions: Analysis of data related to achievement of community college transfers.

ger, Business Administration: Converted 7090 binary tapes to 3600 binary tapes. Analysis of business statistics.

iversity Health Service: Consulting and programming related to precessing outpatient forms. Set up system for freshman forms processing.

rder, Zoology: Programming assistance in combining five small programs to run on CDC 3600. Analysis of data on squirrels feeding habits.

nton, Government Department: Analysis of data from questionairre of a public opinion class related to student power.

LIBRARY PROGRAMS

eta FORTRAN program to tabulate frequency of occurence of values and output the count and percent.

bugged the Bio-Medical program, BMD08V, for analysis of variance,

sted ILP-1 program which is CDC's integer linear programming.

OTHER WORK

rogram to convert key punch codes from IBM 029 to IBM 026 codes.

rogram to convert IBM S/360 tapes to the form used by the CDC 3600.

rogram to use the random access capability of drum storage.

COMPASS program to pack data values 3-to-a-word or 6-to-a-word where number of values exceeded memory capacity.

lity programs for listing tapes or cards. Another utility program to do card-to-tape operations.

rogram to check sets of cards for completeness and order. This program is used with Bio-Medical programs and with KWIC.

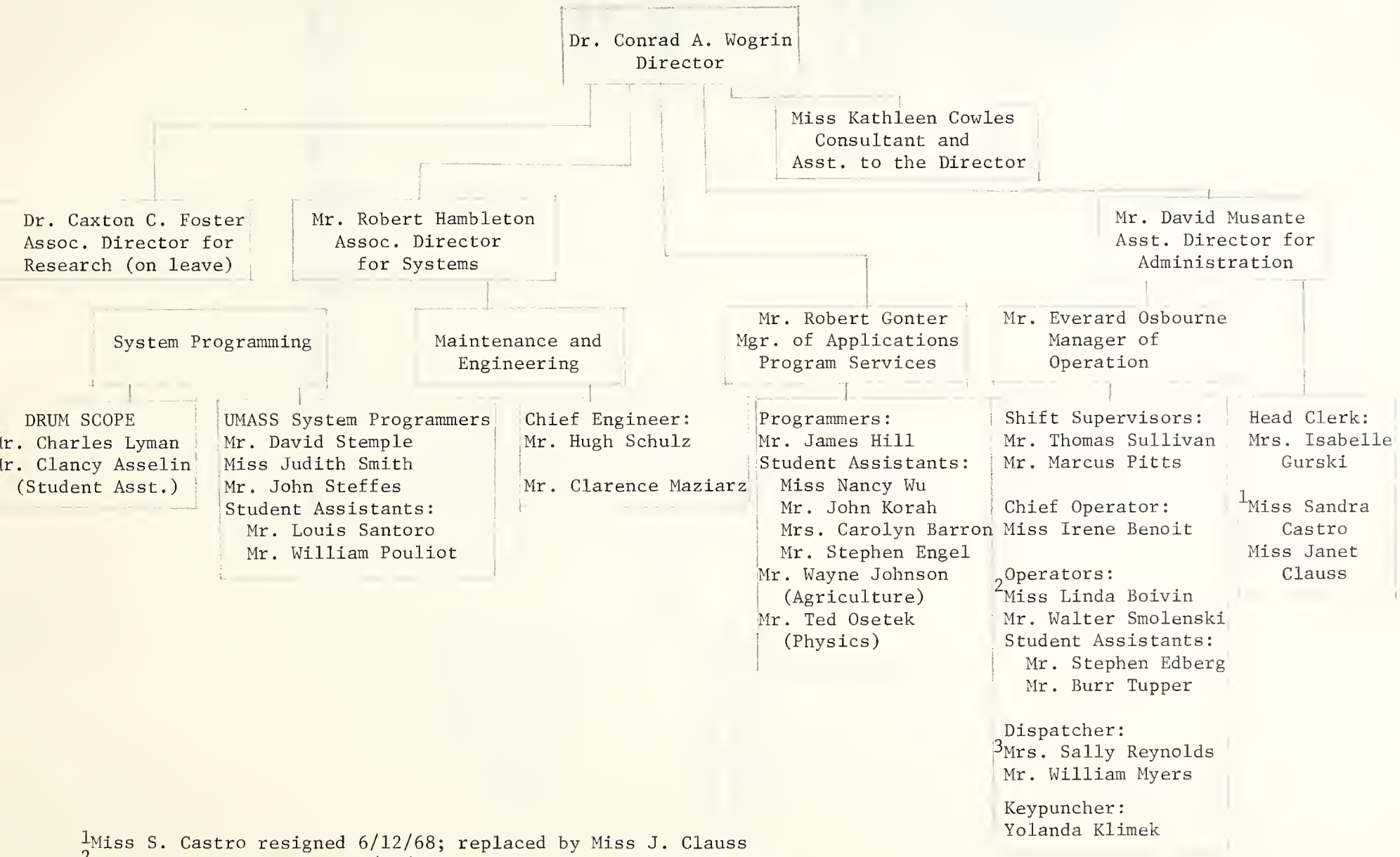
rogram to account for Applications Programming charges.

rogram to shift data in words right or left a specified number of bits.

de corrections to SIMSCRIPT and prepared library tapes.

RESEARCH COMPUTING CENTER

Fiscal 1968



[1]Miss S. Castro resigned 6/12/68; replaced by Miss J. Clauss
[2]Miss L. Boivin resigned 3/15/68; replaced by Mr. W. Smolenski
[3]Mrs. S. Reynolds resigned 5/18/68; replaced by Mr. W. Myers

RESEARCH COMPUTING CENTER

Fiscal 1968

TAFF: 23 full time 8 half time

DMINISTRATION: 5 full time

Director	C. A. Wogrin
Assistant Director for Administration	D. Musante
Head Clerk	I. Gurski
Assistant Clerk	S. Castro[1]
Assistant Clerk	J. Clauss
Consultant and Assistant to Director	K. Cowles

YSTEMS: 5 full time 3 half time

Associate Director	R. Hambleton	
System Analyst	D. Stemple	
System Programmers	J. Smith	
	J. Steffes	
	C. Lyman	
	L. Santoro	(Student Assistant)
	W. Pouliot	(Student Assistant)
	C. Asselin	(Student Assistant)

PPLICATIONS PROGRAMMING SERVICE: 4 full time 3 half time

Supervisor	R. Gonter	
Programmers	J. Hill	
	N. Wu	(Student Assistant)
	J. Korah	(Student Assistant)
	C. Barron[2]	(Student Assistant)
	S. Engel	(Student Assistant)
	W. Johnson	(Agriculture)
	T. Osetek	(Physics)

[1] Miss S. Castro resigned 6/12/68; replaced by Miss J. Clauss

[2] Mrs. C. Barron resigned 2/3/68; replaced by Mr. S. Engel

AFF (con't)

ERATIONS: 7 full time 2 half time

Manager of Operations		E. Osbourne	
Evening Supervisor		M. Pitts	
Night Supervisor		T. Sullivan	
Chief Operator		I. Benoit	
Operator	3	L. Boivin	
Operator		W. Smolenski	
Dispatcher and Keypunch Operator	4	S. Reynolds	
Dispatcher and Keypunch Operator		W. Myers	
Operator		B. Tupper	(Part Time)
Operator		S. Edberg	(Student Assistant)
Keypuncher		Y. Klimek	

SEARCH

Associate Director	C. C. Foster	(On Leave)

GINEERING 2 full time

Chief Engineer	H. Schulz
Assistant Engineer	C. Maziarz

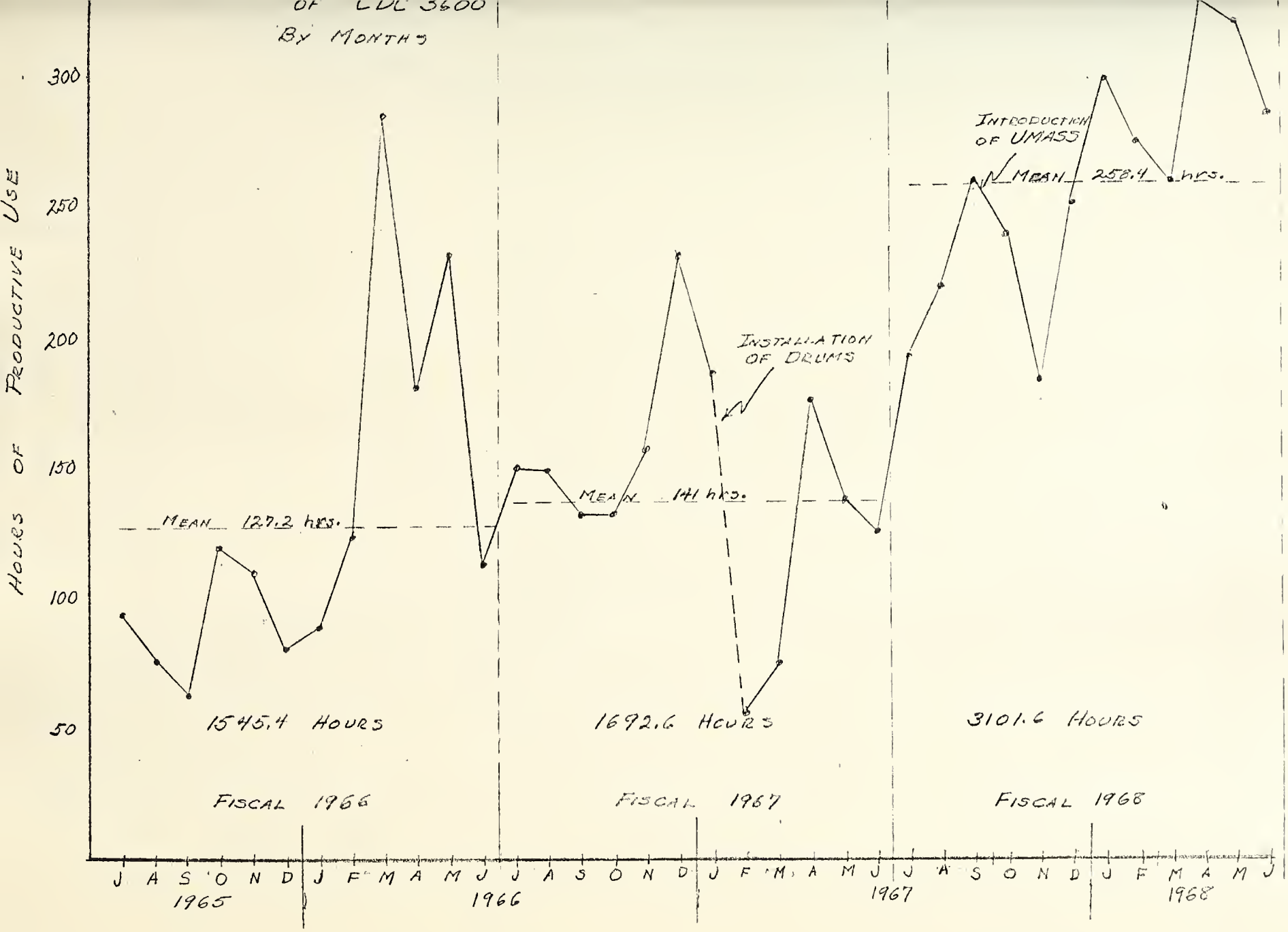
Miss L. Boivin resigned 3/15/68; replaced by Mr. W. Smolenski
Mrs. S. Reynolds resigned 5/18/68; replaced by Mr. W. Myers

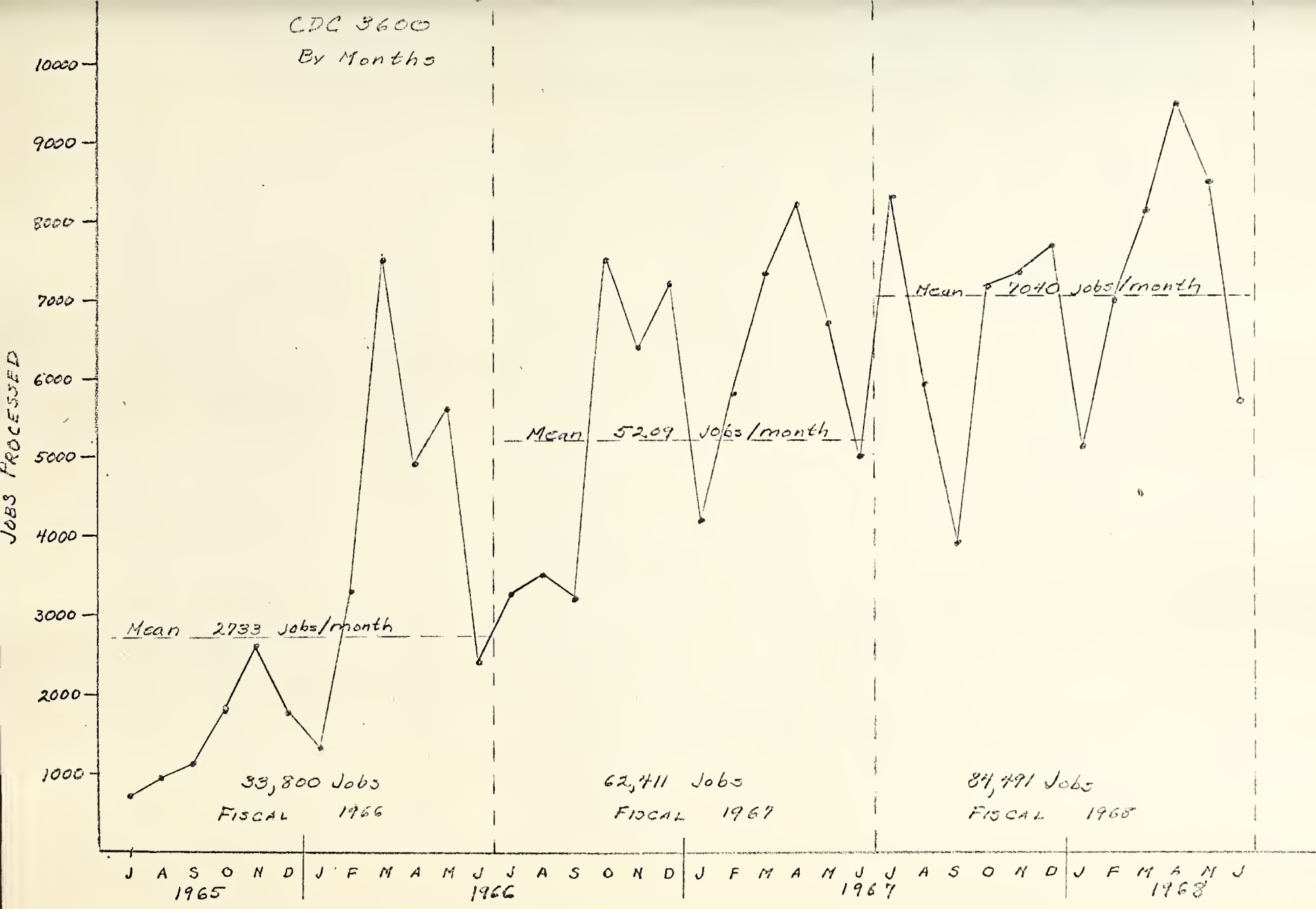
RESEARCH COMPUTING CENTER

CDC 3600 Time Record

Fiscal 1968

POWER ON		8661.40 hrs.
Scheduled Maintenance	251.30	
Emergency Maintenance	212.58	
Center Closed	1304.00	
AVAILABLE OPERATION TIME		6893.52
UMASS Time-Sharing		947.13
DRUM SCOPE - Batch		5946.39
System overhead	1964.83	
Idle time	1148.74	
Lost time	32.85	
Chargeable CPU Time		2799.97
Customers	2172.42	
UMASS development	454.67	
DRUM SCOPE development	172.88	


OF CDC 3600
BY MONTHS
HOURS OF PRODUCTIVE USE
300
250
200
150
100
50
MEAN 127.2 hrs.
MEAN 141 hrs.
MEAN 258.4 hrs.
INSTALLATION OF DRUMS
INTRODUCTION OF UMASS
1545.4 HOURS
1692.6 HOURS
3101.6 HOURS
FISCAL 1966
FISCAL 1967
FISCAL 1968
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1965
1966
1967
1968


CDC 3600
By Months
JOBS PROCESSED
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
Mean 2733 Jobs/month
Mean 5209 Jobs/month
Mean 7040 Jobs/month
33,800 Jobs
FISCAL 1966
62,411 Jobs
FISCAL 1967
84,491 Jobs
FISCAL 1968
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
1965
1966
1967
1968

From: Professor Bernard B. Berger Date: June 21, 1968

To: Dean Edward C. Moore

Subject: Information for Annual Report, 1967-68.

1. Students Served:

a. The research projects of the Water Resources Research Center provided financial support to a number of students in several Departments:

	1965	1966	1967	1968
Undergraduates -- Student Labor	4	10	10	14
Graduates -- Student Labor	11	13	8	5
Graduate Assistantships	10	5	9	20
Graduate Student Summer Employment	1	0	3	5
Total	26	28	30	44

In 1968, graduate students in the following University components received support: Departments of Agricultural Engineering, Botany, Chemistry, Civil Engineering, Forestry and Wildlife Management, Government, Landscape Architecture, Microbiology, and Plant and Soil Sciences; Institute of Agricultural and Industrial Microbiology, and the School of Education.

b. Faculty:

The Director taught PH 707 and PH 708, Graduate Seminar in Public Health. A total of 20 students took these courses.

c. Guidance Committees:

Chairman, Committees for F. L. Langevin and P. H. Perkins, M.S. Candidates, Department of Public Health.

Member, Committee for Philip A. Bentley, Ph.D. Candidate, Department of Botany.

c. Guidance Committees, Cont.

Member, Committee for Robert W. Cleary, Ph.D. Candidate, Department of Chemical Engineering.

Member, Committee for Peter Meier, Ph.D. Candidate, Department of Environmental Engineering.

d. University Seminars:

12 Seminars for graduate students in Public Health, Environmental Engineering, Landscape Architecture, Agricultural Economics, and Forestry and Wildlife Management.

2. Faculty Publications, Research Grants, Research Projects and Other Professional Activities:

a. Faculty Publications:

In 1968, nine articles were published which were based on projects supported by this Center. An additional nine papers on Center-supported work are in preparation. Appendix 1 lists these articles and papers.

b. Research Grants and Projects:

The Center received a grant of $100,000 under Section 100, The Water Resources Research Act of 1964, P.L. 88-379. These funds supported research on 10 projects. (Appendix 2)

The Center received grants totalling $204,700 under Section 101 of the Water Resources Research Act for support of 4 projects which were initiated on July 1, 1967. (Appendix 3)

The Center was notified that new awards totalling $231,430 were approved under Section 101 of the Water Resources Research Act for support of 3 additional projects beginning July 1, 1968. (Appendix 4)

Notification was received that the Federal Water Pollution Control Administration had approved a grant in the amount of $41,969.00 for a Summer Water Pollution Institute for High School Teachers -- Principal Investigator, Dr. Warren Litsky.

c. Other Professional Activities:

Professional Organization Activity

Member, Governor's Public Health Council

Member, Advisory Committee on Environmental Health, Massachusetts Department of Public Health

Member, Project Review Committee, Massachusetts Comprehensive Health Planning Program

Chairman, Committee on Environmental Quality Management, American Society of Civil Engineers

Member, Water Quality Research Council, American Society of Civil Engineers

Representative of American Public Health Association on Committee to Develop Standard for Watercraft Sewage Disposal

Secretary-Treasurer, International Association on Water Pollution Research

Consultant, Massachusetts Water Resources Commission

Member, Governor's Oversight Committee on Water Pollution Control

Member, Program Committee, Water Pollution Control Federation

Meetings

Panelist, Governor's Conference on State-Local Partnership in Health

Chairman, Water Resources Planning Conference, sponsored by the New England Council of Water Center Directors

Chairman, Water Resources Conference, sponsored by Massachusetts League of Women Voters

c. Other Professional Activities, Cont.

Meetings, Cont.

Discussion Leader, Interactions of Metropolitan Area Water Systems With Other Systems, Meeting on Metropolitan Area Water Systems sponsored by the Office of Water Resources Research, Department of the Interior

Presentation of Paper, "The Environmental Engineer and the Ecosystem Under Stress", annual meeting of the American Association for the Advancement of Science

Presentation of Paper, "Inadequacies in Application of Principles of Fluid Mechanics", Symposium on Fluid Mechanics, University of Massachusetts

Presentation of Talk, "Problems of Water Quality Control" combined meetings of Massachusetts Society of Dairy Technologists, Food Technologists, and Candy Technologists

Presentation of Talk, "Water Resources and the Connecticut River", Springfield, Massachusetts Junior Chamber of Commerce

Presentation of Talk, "The Program of the Water Resources Research Center, University of Massachusetts. Sigma XI Luncheon, Smith College

Seminars

Presented at Northeastern University and University of Massachusetts - Boston

3. Major Accomplishments:

a. A focus of Water Resources Research Center research has been established in the five problem areas described in the last annual report:

Conservation and optimum use of lakes.

Optimum use of major stream flowing through a growing metropolitan area.

3. Major Accomplishments, Cont.

a., Cont.

Improvement of methodology for planning for the optimum use of hitherto independent watersheds.

Accelerating the cleansing action of estuaries.

Determination of the role of wetlands in the optimum development of an area.

The Water Resources Commission has accepted these research areas as reflecting the major problem areas in Massachusetts. The Office of Water Resources Research has expressed its interest in these areas as reflecting major areas in the northeastern part of the United States.

b. The multi-departmental research on lakes supported by this Center has evolved into an interdisciplinary project characterized by frequent meetings of the principal investigators to discuss mutual problems, common field study sites, a joint logistical basis for field studies, and a joint laboratory facility.

c. The Water Resources Research Center Library was established in Munson Hall.

4. Special Projects:

a. The Center in conjunction with various University components has initiated research in the following areas:

Demographic projections in relation to the water resource

A regional model of water pollution control

An inventory of lakes in Massachusetts as a first step in development of a lake classification scheme

A predictive model for thermal pollution

Evaluation of pollution caused by recreational watercraft

It is expected that each of these studies will evolve into a full scale project. The project on the regional water pollution control model has already been

4. Special Projects, Cont.

a. Cont.

awarded a grant of $129,580 by the Office of Water Resources Research under Section 101 of the Water Resources Research Act of 1964.

b. A conference on Water Resources Planning sponsored by the New England Council of Water Center Directors was held in Boston on May 16-17, 1968. Approximately 100 invited persons attended.

5. Future Plans and Needs:

a. Plans for Conferences:

(1) A lake study conference is being planned for June, 1969.

(2) A Northeast conference on eutrophication is being planned jointly with the Federal Water Pollution Control Administration.

(3) A conference on the "Ecosystem Under Stress", supported by the American Society of Civil Engineers and the Ecological Society of America is being planned at the University of Massachusetts.

b. Training:

(1) A plan to provide educational opportunities in Water Resources Sciences will be submitted in the near future for consideration by the Graduate School. This program, which will lead to the M.S. degree, will be directed to the needs of professional workers now engaged in water resources management and to those preparing for careers in water resources management. This program will supplement the specialized programs in water resources offered by other University components.

(2) A plan for providing short term training in water resources is being developed with the Massachusetts Department of Natural Resources.

c. Facilities:

At the present time the facilities of the Water Resources Research Center are divided between Holdsworth Hall and Munson Hall. While the total space provided by these two areas is extremely valuable to this Center, the separation is awkward from the point of view of administration and communication. A long-range program must provide for approximately 1000 square feet of floor area at one place for program administration, conferences, and the water resources library.

d. Personnel:

The need for an Assistant or Associate Director is becoming more important. It is expected that a well-qualified candidate will be available for duty in June, 1969.

PUBLICATIONS -- JULY 1, 1967 - JUNE 30, 1968

Administration

Activities of the Water Resources Research Center - Excerpts of the 1967 Annual Report. Water Resources Research Center Publication No. 2. Edited by Bernard B. Berger

Pollution, B. B. Berger. 1968 Encyclopedia Americana Annual, pp. 543-545.

The Environmental Engineer and the Ecosystem Under Stress. B. B. Berger. Paper presented at annual meeting of the American Association for the Advancement of Science at joint session of the Ecological Society of America and the American Society of Civil Engineers, New York City (December 27, 1967). (Publication pending).

Review of "A Strategy for a Livable Environment", Committee on Environmental Health Activities, B. B. Berger, Chairman; Journal of the Sanitary Engineering Division, ASCE, 93, pp. 171-179 (December 1967).

Recent Developments in Environmental Pollution. B. B. Berger, Massachusetts Physician. (Publication pending).

Inadequacies in Applications of Principles of Fluid Mechanics to Water Quality Management. B. B. Berger. Proceedings, Symposium on Fluid Dynamics, University of Massachusetts, Amherst, Massachusetts. (December 1-2, 1967).

Major Water Resources Problems in Massachusetts. B. B. Berger. The Massachusetts Heritage, Vol. 6, No. 1 (March 1968).

The Problem of Cytotoxicity of Water -- A Discussion. B. B. Berger. To be presented at the Fourth International Conference on Water Pollution Research, Prague, Czechoslovakia September, 1968. To be published in Conference Proceedings.

The Natural Cycle of Water Reuse. B. B. Berger, Water and Wastes Engineering. (Publication pending).

Engineering Evaluation of the Virus Hazard in Water, Committee on Environmental Quality Management, B. B. Berger, Chairman. Prepared for publication in the Journal of the Sanitary Engineering Division, ASCE.

WR-18C

Ion Exchange Equilibria - Phosphate-Chloride Exchange on a Strong Base Anion Exchanger. O. T. Zajicek. Environmental Science and Technology (Publication pending).

WR-19A

Can Mortality Rates Be Determined for Estuarine Ichthyoplankton Populations? Charles F. Cole. Paper presented at the Symposium on Egg, Larval, and Juvenile Stages of Fish in Atlantic Coastal Estuaries, June 10-12, 1968. To be published in Symposium Proceedings.

Seasonality of Ichthyoplankton in the Weweantic River Estuary. Robert Lebida. Paper presented at the Symposium on Egg, Larval, and Juvenile Stages of Fish in Atlantic Coastal Estuaries, June 10-12, 1968. To be published in Symposium Proceedings.

Pesticide Residues as a Possible Factor in Larval Winter Flounder Mortality. Roderick Smith, Paper presented at the Symposium on Egg, Larval, and Juvenile Stages of Fish in Atlantic Coastal Estuaries, June 10-12, 1968. To be published in Symposium Proceedings.

WR-19C

Persistence and Movement of Parathion in Irrigation Waters. C. W. Miller, W. E. Tomlinson, and R. L. Norgren. Pesticide Monitoring Journal, Vol. 1 No. 2(September, 1967).

WR-20

Selective Feeding of Tubificids on Bacteria. R. A. Coler, H. B. Gunner, B. M. Zuckerman. Nature, Vol. 216 (December 16, 1967)

Degradation of 'Diazinon' by Synergistic Microbial Action. H. B. Gunner and B. M. Zuckerman. Nature, Vol. 217, No. 5134 (March 23, 1968).

WR-22

Community Leader Attitudes on Water Pollution Abatement in Selected Massachusetts Communities on the Connecticut River. Robert A. Shanley. Water Resources Research Center, University of Massachusetts, Amherst (June, 1968).

WATER RESOURCES RESEARCH CENTER

University of Massachusetts
Amherst, Massachusetts

TITLE	PRINCIPAL INVESTIGATOR	COMPLETION DATE	BUDGET
Allotment Grant Program - FY68			
Survey and Evaluation of Small Artificial Recreational Ponds in Central Massachusetts (WR-1)	Dr. James McCann	June 30, 1968	$ 4,850
Hydrological Studies in Massachusetts (WR-3)	Prof. George Higgins	June 30, 1969	5,000
Closed Systems for Animal Sewage Treatment (WR-9)	Dr. J. T. Clayton	June 30, 1970	12,000
Determination of the Feasibility of Removal of Algal Nutrients in Lake Waters by Ion-Exchange (WR-18C)	Dr. O. T. Zajicek	June 30, 1970	5,490
Ecology of the Young Fishes of the Weweantic River Estuary (WR-19A)	Dr. C. F. Cole	June 30, 1969	6,000
Adsorption of Pesticides on Earth Materials (WR-19B)	Dr. John H. Baker	June 30, 1968	3,500
Pesticide Occurrence, Concentration, and Degradation in Free Water Systems (WR-19C)	Dr. H. B. Gunner Dr. C. W. Miller Dr. B. M. Zuckerman	June 30, 1968	12,000
Microbial Degradation of Organic Pollutants of Industrial Origin (WR-20)	Dr. H. B. Gunner	June 30, 1970	10,000
Optimum Utilization and Management of Waterbearing Formations Hydraulically Connected to a Stretch of the Connecticut River (WR-21)	Dr. Ward S. Motts	June 30, 1970	6,000
The Role of Aquatic Vascular Plants in the Eutrophication of Selected Lakes in Western Massachusetts (WR-23)	Dr. R. B. Livingston	June, 1970	4,500
TOTAL			$69,340
Office of the Director (itemized on attachment)			$30,330
Funds in Reserve			330
TOTAL ALLOTMENT GRANT BUDGET			$100,000

Projects Granted Awards by the Office of Water Resources Research
Department of the Interior

For Support Beginning July 1, 1967

TITLE	PRINCIPAL INVESTIGATOR	COMPLETION DATE	FEDERAL GRANT
Institutional Patterns for Evolving Regional Programs for Water Resource Management. (WR-B-003-MASS)	Dr. I. Howards	June 30, 1970	$ 53,600
Programmed Selection of Optimum Uses of a Small Water Resource Subjected to Simultaneous Demand Stresses. (WR-B-004-MASS)	Dr. C. A. Carlozzi	June 30, 1970	$ 78,700
Control of Benthic Deposits in Lakes. (WR-B-005-MASS)	Dr. T. H. Feng	June 30, 1970	$ 36,900
Microbial Intervention in the Eutrophication Process. (WR-B-006-MASS)	Dr. Warren Litsky	June 30, 1970	$ 35,500
TOTAL			$204,700

Projects Granted Awards by the Office of Water Resources Research
Department of the Interior

For Support Beginning July 1, 1968

TITLE	PRINCIPAL INVESTIGATOR	FEDERAL GRANT
A Methodology for Planning Optimal Regional Waste Management Systems. (WR-B-011-MASS)	Dr. D. Dean Adrian	$129,580
Watershed Response to Hydrologic Influence. (WR-B-008-MASS)	Prof. G. R. Higgins	$ 38,600
Enhancement of Ecologic and Aesthetic Values of Wetlands Associated with Interstate Highways. (WR-B-010-MASS)	Dr. C. A. Carlozzi	$ 63,250
TOTAL		$231,430

The University of Massachusetts Press

MUNSON HALL AMHERST, MASSACHUSETTS 01002

June 20, 1968

To: Dean Moore
From: Leone Barron
Re: Annual Report, 1967-68

Publications

During 1967-68, the University of Massachusetts Press published the following works:

Baskin, Leonard. Figures of Dead Men, with a foreword by Archibald MacLeish

Francis, Robert. The Satirical Rogue on Poetry

Hicks, John. Thoreau in Our Season (reprint)

Koehler, Stanley, Leon O. Barron, Robert G. Tucker, and David R. Clark
A Curious Quire (reprint)

Potter, Vincent G. Charles S. Peirce on Norms and Ideals

Robin, Richard S. Annotated Catalogue of the Papers of Charles S. Peirce

Scott, John Anthony. The Defense of Gracchus Babeuf before the High Court of Vendome

Transactions of the Charles S. Peirce Society, III 2, IV 1, IV 2

Van Voris, Jacqueline. Constance de Markievicz: In the Cause of Ireland

Weston, John C., editor. The Jolly Beggars: A Cantata

Now completing production, for publication this summer, are the following:

Fabos, Julius, Gordon T. Milde, and V. Michael Weinmayr. Frederick Law Olmsted, Sr.: Founder of Landscape Architecture in America

MacKeever, Frank C. Native and Naturalized Plants of Nantucket, edited by Harry Ahles

Ruiz, Ramón Eduardo. Cuba: The Making of a Revolution

In editorial and design stages for publication this fall and winter are:

Dubofsky, Melvyn. When Workers Organize New York City in the Progressive Era

Fraser, Thomas. Culture and Change in India: The Barpali Experiment

Grene, Marjorie, editor. The Anatomy of Knowledge

Polity, the Journal of the Northeastern Political Science Associations, I 1.

Ruchames, Louis. Racial Thought in America from the Puritans to Abraham Lincoln

Transactions, IV 3 (October 1)

Wyman, David. Paper Walls: America and the Refugee Crisis, 1938-41

Finances

The Press budget is sustained by an annual grant from the university, income from sales, and outside subsidies. During 1967-68, outside subsidies supported publication of Annotated Catalogue of the Papers of Charles S. Peirce, The Book of the American Woodcock, Frederick Law Olmsted, Sr.: Founder of Landscape Architecture in America, and Native and Naturalized Plants of Nantucket.

Receipts continue to rise, as titles from the backlist, with new works, contribute to sales. Receipts for 1965-66 totalled $17,000; for 1966-67, $34,108; for 1967-68, approximately $55,000. Since the inception of the Press, over 30,000 volumes have been distributed, either through direct sales or through agencies here and abroad. The Press has distribution agents in Europe, Canada, Latin America, and a sales representative for the eastern United States.

Needs

In the last annual report, the Press specified two needs as major: additional staff and a warehouse. Warehousing remains a chronic problem. At present the facilities in the basement and attic of Munson Hall are all but exhausted, and the Press must pay rentals to binderies to store the excess. Staffing problems will be solved in 1968-69 with the appointment of a full-time manuscript editor and a distribution manager--until further growth necessitates further manpower and specialization. As recommended by the Graduate Dean and the Director, salaries of full-time employees should gradually be transferred to state funds. In time, salaries would represent the University's contribution to the operating budget, with Press income generating the balance.

Accomplishments

The books, as itemized on page 1, represent the concrete accomplishment of the Press. During the year the backlist, as well

as current titles, received predominantly favorable reviews. Press books have been, or are to be, reviewed in major journals and newspapers here and abroad. Comments have included:

The Defense of Gracchus Babeuf Before the High Court of Vendome, ed. and trans. by John Anthony Scott

> In this extremely attractive and well illustrated work, the historian of the French Revolution is permitted to view the magnificent defense offered by Babeuf when he was tried for attempting to lead a revolt against the Directory government in 1796. His eloquent statement, masterfully translated and edited by Scott, indicates the tremendous impact which Babeuf's words were to have on future social thinkers...No similar work exists in translation....Herbert Marcuse has appended a perceptive analysis of Babeuf's role as a social thinker. Recommended highly....--Choice

Erwin Schrödinger: An Introduction to His Writings, by William T. Scott

> The author has presented us with a lovely book....I am convinced that the present work will tempt many to read Schrödinger's original papers again.
> --Physics Today

> This monograph--written with authority--gives us the first comprehensive study of the scientific and philosophical works of Schrödinger...Scott gives us a beautiful biographical sketch and several interpretive chapters on the foundations of wave mechanics and quantum mechanics (as viewed by Schrödinger)....Should be read by students at all levels and in all fields of intellectual endeavor. (Selected by Choice as an Outstanding Academic Book of 1967.)
> --Choice

The Book of the American Woodcock, by William G. Sheldon

> This is an original contribution to knowledge....Both serious birdwatchers and avid woodcock hunters will take much satisfaction in this study, which is affectionate as well as scientific. This bizarre shorebird that has taken to the woods has found in Sheldon a devoted and scholarly biographer.
> --Chicago Tribune

Constance de Markievicz: In the Cause of Ireland, by Jacqueline Van Voris

> There is little doubt that her 392-page book is the definitive biography of the countess....
> --The Sunday Express, London

> Mrs. Van Voris, who obviously understands the period, moves skillfully through the political thickets. The research is thorough, the errors very minor....
> --Nation

Daniel Webster and the Supreme Court, by Maurice Baxter

> This is a thoroughly researched, well-written study of Webster's arguments before the Supreme Court....
> --American Historical Review

> The author, in a style that is at once lucid, interesting, and economical, skillfully traces the lines of argument offered in Webster's pleadings and their impact on the opinions rendered by the justices. What makes this book of special value to scholars in public address is the sensitivity of the author, a professor of history at Indiana University, to the central role of oratory in the statesmanship of that day...
> --The Quarterly Journal of Speech

The University of Massachusetts Press published its first volume in September of 1964. Since then the list has grown to over thirty titles, financial support by the University has increased, the general professionalism of the staff has improved, salaries have moved toward the norms in the profession, and a lively and concerned Press Committee has consistently supported development of the publishing program. The accomplishments of this initial period must be attributed to all concerned--authors, staff, administrators, faculty, and the craftsmen who make the books.

ANNUAL REPORT 7/1/67 - 6/30/68
POLYMER SCIENCE AND ENGINEERING ADVANCED DEGREE PROGRAM
INITIATED 9/1/66

Students Served by Polymer Science and Engineering (PSE)[1]

	Spring Semester 1966	Fall Semester 1966	Spring Semester 1967	Fall Semester 1967	Spring Semester 1968
Majors	0	2	5	16	23
Others in Residence[2]	0	10	10	7	7
Part-Time Majors	0	7	10	12	15

[1] Numbers are accurate to ± 2.

[2] Mostly from Departments of Chemistry, Civil, and Mechanical and Aerospace Engineering.

The PSE Seminar Program has been the most active on campus, about 50 speakers per year, about 20 from outside the U.S. Seminar notices are mailed to over 200. The Seminar Program has been supervised by Professor Karasz.

Faculty

Three PSE Faculty members hold joint appointments with other departments; Professors MacKnight and Stein are in Chemistry and Professor Lenz is in Chemical Engineering. Professors Carmichael, Karasz, and Porter hold appointments exclusively within PSE. We have one adjunct professor, Dr. Newman of Ford Research Laboratories, Dearborn, Michigan.

ROGER S. PORTER

Professor and Chairman, Polymer Science and Engineering Program.

ublications

The following have appeared in print since the last annual report.

78. Heats of Transition for Some Cholesteryl Esters by Differential Scanning Calorimetry
R. S. Porter and J. F. Johnson
Journal of Physical Chemistry 71, 1224 (1967).

79. Method of Calibrating Gel Permeation Chromatography with Whole Polymers
M. J. R. Cantow, R. S. Porter and J. F. Johnson
Journal of Polymer Science Part A-1, 5, No. 6, 1391 (1967).

80. Extended Xylene Solubility Studies
R. S. Porter and J. F. Johnson
Journal of Chemical and Engineering Data 12, 3, 392 (1967).

81. The Polymorphism of Cholesteryl Esters: Differential Thermal and Microscopic Measurements on Cholesteryl Myristate
E. M. Barrall, R. S. Porter and J. F. Johnson
Molecular Crystals 3, 103 (1967).

82. The Rheology of Liquid Crystals
J. F. Johnson and R. S. Porter
In book RHEOLOGY, THEORY AND APPLICATIONS, F. R. Eirich, Editor, Academic Press, New York, Chapter 5, 317 (1967).

83. Heats and Temperatures of Transition of Some Aromatic Liquid Crystal Forming Materials
E. M. Barrall, R. S. Porter and J. F. Johnson
Molecular Crystals 3, No. 3, 299 (1968).

84. ANALYTICAL GEL PERMEATION CHROMATOGRAPHY
J. F. Johnson and R. S. Porter, Editors
Interscience Publishers, New York, 344 pages, 1968.

85. Viscous and Elastic Behavior Attributed to Polymer Entanglements
R. S. Porter, W. J. MacKnight and J. F. Johnson
Rubber Chemistry and Technology 40, No. 5, 1 (1967).

86. Flow Properties of a Partially Crystalline Polyethylene
R. S. Porter and J. F. Johnson
Transactions of the Society of Rheology 11, No. 3, 259 (1967).

87. Fractionation of Polymers and Determination of Molecular Weight Distributions
J. F. Johnson, R. S. Porter and M. J. R. Cantow
Encyclopedia Polymer Science and Technology 7, 231 (1967).

88. Physical Properties of Stereoregular Polymers in the Solid State
J. F. Johnson and R. S. Porter
In book THE STEREOCHEMISTRY OF MACROMOLECULES, Volume III, A. D. Ketley, Editor, Marcel Dekker, New York, 1968.

unded Research Grants

		Agency	Year of Grant	Total Funds
1.	Viscosity Changes with Shear and Composition near Transitions in Polymer-Solvent Systems	Paint Research Institute	Second	$12,000
2.	Thermal Properties of Mesophases	Department of Health, Education and Welfare	Second	$60,250
3.	The Viscosity of Partially Crystalline Polymers	National Science Foundation	First	$38,400
4.	Shear-Induced Changes in Polymer Molecular Weight Distribution	U.S. Army-Durham	First	$36,457
5.	Mitsubishi Research Grant	Mitsubishi Company Japan	First	$ 2,400

rofessional Activities

Editorial Work:

1. Advisory Board Journal of Polymer Science, A-2, Polymer Physics.
2. Assistant Editor, Transactions of the Society of Rheology
3. Annual Review of J. Applied Physics for Rheology Abstracts, British Society of Rheology

Committees and Memberships:

American Chemical Society

1. Division of Polymer Chemistry
   a. Treasurer-Elect
   b. Biennial Polymer Symposium Arrangements Chairman
   c. Symposia Chairman at National Meetings
      (i) Gel Permeation Chromatography
      (ii) Analytical Calorimetry
   d. Education Committee
2. Division of Colloid and Surface Chemistry
   a. Committee on Bylaws
   b. Committee on Graduate Student Relations
   c. Committee on Annual Symposium

American Physical Society

1. Program Committee, Division of High-Polymer Physics

International Meeting on Liquid Crystals - 1948 Organizing Committee

Society of Rheology, Executive Committee

British Society of Rheology

Research Presentations

Place	Subject	Date
Gordon Research Conference on Elastomers New London, New Hampshire	Mechanically Induced Changes in Polymer Molecular Weight Distribution	8/4/67
Differential Scanning Calorimetry Short Course University of Massachusetts	Studies on Liquid Crystals	8/11/67
Tennessee Eastman Company Kingsport, Tennessee	The Flow of Partially Crystalline Polymers	9/6/67
Society of Plastics Engineers Regional Meeting Washington, D.C.	Shear Degradation of Polymer Systems	9/7/67
American Chemical Society National Meeting Chicago, Illinois	Phase Transitions in Liquid Crystal Homologous Series	9/14/67
American Chemical Society National Meeting Chicago, Illinois	Transition Heats for Several Aromatic Compounds which Form Liquid Crystals (Presented by E. M. Barrall II)	9/14/67
Am. Inst. Chem. Eng. Annual Meeting New York	The Rheology of Partially Crystalline Polyethylene	11/30/68
International Symposium on Polymer Characterization Battelle Institute	The Use of Depolarized Light Intensity Measurements in Polymer Characterization (Presented by E. M. Barrall II)	11/30/68
U. Mass. First Internal Symposium Interdisciplinary Laboratory Committee for Fluid Dynamics	Viscosity Measurements at Extreme Shear in Laminar Flow	12/2/67
Delaware Section American Chemical Society Polymer Group	The Flow of Partially Crystalline Polymer Systems	1/9/68

University of Akron Institute of Polymer Science	Energy-Induced Changes in Polymer Molecular Weight Distribution	1/18/68
Lowell Technological Institute Department of Chemistry	Developments in Gel Permeation Chromatography	3/3/68
Society of Plastics Engineers Mid-Hudson Section New York	Gel Permeation Chromatography	3/13/68
Textile Research Institute Princeton University Princeton, New Jersey	Energy-Induced Changes in Polymer Molecular Weight Distribution	3/14/68
Meeting Advisory Committee Polymer Research Institute University of Massachusetts	Viscosity Measurements at Extreme Shear in Laminar Flow	3/15/68
University of Michigan Symposium on Lubrication and Lubrication Rheology	Viscosity Measurements at Extreme Shear in Laminar Flow	3/19/68
American Physical Society Meeting Berkeley, California	An Interpreation of Mesophase Transitions	3/21/68
American Chemical Society National Meeting San Francisco, California	Mesophase Transition Thermodynamics for Several Homologous Series	5/4/68
American Chemical Society National Meeting San Francisco, California	Differential Scanning Calorimetry of Liquid Crystals (Presented by E. M. Barrall II)	5/4/68
American Chemical Society National Meeting San Francisco, California	The Rheology of Partially Crystalline Polyethylene (Presented by A. R. Bruzzone)	5/3/68
Wayne State University Polymer Conference Series	Elution and Gel Permeation Chromatography	5/6/68
Rensselear Polytechnic Institute Polymer Rheology Colloquium	Rheological Variables in Concentrated Polymer Systems	5/15/68
S. C. Johnson & Sons Racine, Wisconsin	The Flow of Amorphous Polymer Systems	6/21/68

JACK B. CARMICHAEL

Assistant Professor, Polymer Science and Engineering Program.

Publications

12. Kinetics of Non-Equilibrium Methylsiloxane Polymerization and Rearrangement
J. B. Carmichael, F. P. Adams and R. J. Zeman
Journal of Polymer Science Part A-1, 5, 741 (1967).

13. Dilution Effects on Dimethylsiloxane Ring-Chain Equilibria
J. B. Carmichael, D. J. Gordon and F. J. Isackson
Journal of Physical Chemistry 71, 2011 (1967).

14. Molecular Weight Distribution and Thermal Characterization of Poly(dimethylsilmethylene)
J. B. Carmichael and G. Levin
Journal of Polymer Science Part A-1, 6, 1 (1968).

15. A Stochastic Model of Gel Permeation Chromatography Separation of Polymers
J. B. Carmichael
Journal of Polymer Science Part A-2; Polymer Physics 6, 517 (1968).

16. A Comparison of the Thermodynamic and Stochastic Models for Gel Permeation Chromatography
J. B. Carmichael
Polymer Preprints 9, 572 (1968).

Funded Research Grants

		Agency	Year of Grant	Total Funds
1.	Polymer Separation Using Gel Permeation Chromatography	University of Massachusetts Research Council	First	$ 750
2.	Polymer Separation Using Gel Permeation Chromatography	National Science Foundation	First	$21,310

Professional Activities

Memberships:

American Chemical Society
Division of Polymer Chemistry

American Physical Society
Division of High Polymer Physics

Sigma Xi

Chemical Society (London)

esearch Presentations

Place	Subject	Date
American Chemical Society National Meeting San Francisco, California	Comparison of the Thermodynamic and Stochastic Models for Gel Permeation Chromatography	March, 1968

Initiated the project "Graduate Science Education for Graduate of Negro Colleges" scheduled for inception in August, 1969.

Invited to become Fellow, American Institute of Chemists.

FRANK E. KARASZ

Associate Professor, Polymer Science and Engineering Program

Publications

1. Thermodynamic Properties of Poly-4-Methyl-Pentene
F. E. Karasz, J. M. O'Reilly and H. E. Bair
Polymer 8, 547 (1967).

2. Effect of Pressure on Polymer-Diluent Systems. I. Polyethylene-α-Chloronaphthalene
F. E. Karasz and L. D. Jones
Journal of Physical Chemistry 71, 2234 (1967).

3. Configurational Enthalpy of Polystyrene
F. E. Karasz, R. M. Joshi, B. J. Zwolinski and J. M. O'Reilly
Journal of Polymer Science Part A-2, 5, 705 (1967).

4. Conformational Transitions in Deuterated Polypeptides
F. E. Karasz and J. M. O'Reilly
Studia Biophysica 4, 69 (1967).

5. Calorimetric Work in the Polymer Science and Engineering Program, University of Massachusetts
F. E. Karasz
Bulletin of Thermodynamics and Thermochemistry 11 (1968).

6. Transition Studies of Poly(2,6-dimethyl-1,4-phenylene ether)
F. E. Karasz, J. M. O'Reilly, H. E. Bair and R. A. Kluge
Polymer Preprints 9, 822 (1968).

7. Laster Light Scattering by Poly-α-amino Acid Solutions
F. E. Karasz, N. C. Ford and W. Lee
IUPAC Preprints, Toronto Meeting (1968).

Funded Research Grants

		Agency	Year of Grant	Total Funds
1.	Calorimetric Studies of Polymers	Air Force Office of Scientific Research	First	$102,044
2.	Conformational Studies of Polypeptides	University of Mass. Research Council	First	$ 750

Professional Activities

Memberships

American Chemical Society
Sigma Xi
Calorimetry Conference
A.S.T.M. Sub-Committee on Thermal Analysis

Elected to American Institute of Chemists

Research Presentations

1. Institute of High Polymers, University of Marburg
2. University of Manchester
3. International Conference on Stable Isotopes, Leipzig
4. C.R.N.S., Strasbourg
5. Chemical Engineering Department, Massachusetts Institute of Technology
6. Chemistry Department, Northern Illinois University
7. San Francisco American Chemical Society Meeting (Invited Paper and Session Chairman)

Recipient of NSF International Travel Grant, October, 1967

ROBERT W. LENZ

Associate Professor, Chemical Engineering and Polymer Science and Engineering Program

Publications

1. Polymer Preprints 8, No. 2, Am. Chem. Soc., September, 1967, jj + 717 pp. (Editor).

2. Polymer Preprints 9, No. 1, Am. Chem. Soc., April, 1968, x + 1054 pp. (Editor).

3. Poly(ester-acetals) from Geometric Isomers of Cyclic Acetal of Methyl Azelaaldehydate
   R. W. Lenz, J. Nelson, R. A. Awl, W. R. Miller and E. H. Pryde
   Polymer Preprints 8, No. 2, 1084 (1967).

Funded Research Grants

		Agency	Year of Grant	Total Funds
1.	Reaction Induced Crystallization of Polymers	National Science Foundation	First	$46,000
2.	Preparation and Evaluation of New Polymers; and New Composite Materials Via Direct Polymerization on or in Catalyst Carrying Substrates	Project Themis Department of Defense	First	$12,000

Professional Activities

Committees and Memberships

Member and Chairman-Elect Lectureship Committee of the Fiber Society.
Chairman, Publications Committee, Polymer Division, ACS.
Editor, Polymer Preprints and responsible for acceptance of papers organization of the General Papers Sessions of the Polymer Division at national ACS meetings.
Member, Editorial Advisory Board, "Macromolecules".
Member, Advisory Board, "Journal of Polymer Science, Part A".
Member, Advisory Committee, University of California Extension.
Alternate Councilor, Connecticut Valley Section, ACS.

Presentations

1. Poly(ester-acetals) from Geometric Isomers of Cyclic Acetals of Methyl Azelaaldehydate, Paper presented at the National Meeting of the ACS. Chicago, Illinois, September, 1967.

2. Preparation and Properties of Poly(ester-acetals), Seminar presented to the Akron Polymer Lecture Group, Akron, Ohio, November, 1967.
3. Education in Rapidly Changing Technology, Talk presented to the Western New England Section of the Society of Plastics Engineers, Springfield, Massachusetts, April, 1968.
4. Poly(ester-acetals), Seminar presented at the Silicone Products Department Research Laboratory, General Electric Company, Waterford, New York, March, 1968.
5. Poly(ester-acetals), Seminar presented at the Monsanto Company, Springfield, Massachusetts, January, 1968.
6. High Temperature Polymers, Seminar presented at the Esso Research and Engineering Company, Baytown, Texas, November, 1967.

Continuing Education Lectures

1. Introduction to Polymerization, Two lectures presented as part of short course on Advances in Polymer Science and Engineering at Wayne State University, April, 1968.
2. Applied Polymer Science, Five-day short course sponsored by Engineering and Physical Sciences Extension, University of California, Los Angeles, June, 1968.

Meetings Attended

1. Gordon Conference on Polymers, New London, New Hampshire, July, 1967.
2. American Chemical Society National Meeting, Chicago, Illinois, September, 1967.
3. Conference on High Temperature Polymers, Wright-Patterson Air Force Base, Ohio, October, 1967. Attendance by invitation only.
4. Biennial Polymer Symposium of the Polymer Division, American Chemical Society, Amherst, Massachusetts, June, 1968.

WILLIAM J. MACKNIGHT

Assistant Professor, Chemistry Department and Polymer Science and Engineering Program

Publications

11. Properties of Ethylene-Methacrylic Acid Copolymers and Their Sodium Salts: Infrared Studies
W. J. MacKnight, L. W. McKenna, B. E. Read and R. S. Stein
Journal of Physical Chemistry 72, 1122 (1968).

12. The Entanglement Concept in Rubber Elasticity
R. S. Porter, W. J. MacKnight and J. F. Johnson
Rubber Chemistry and Technology 40, 5, 1 (1967).

13. Properties of Ethylene-Methacrylic Acid Copolymers and Their Sodium Salts: Mechanical Relaxations
W. J. MacKnight, L. W. McKenna and B. E. Read
Journal of Applied Physics 38, 11, 4208 (1967).

Funded Research Grants

		Agency	Year of Grant	Total Funds
1.	The Role of Interchain Forces in Rubber Elasticity	National Science Foundation	Second	$18,700
2.	Chemical Stress Relaxation	National Science Foundation	First	$12,900

Research Presentations

American Chemical Society National Meeting, Chicago, Illinois, September, 1967.

RICHARD S. STEIN

Commonwealth Professor of Chemistry, Director of Polymer Research Institute, and Member PSE Faculty

Publications

106. Deformation of Polybutene-1 Spherulites
R. S. Stein and R. Yang
Journal of Polymer Science Part A-2, 5, 939 (1967).

107. Randomization of Orientation of Films and Fibers
R. S. Stein and C. R. Desper
Journal of Polymer Science Part B, 5, 893 (1967).

108. The Scattering of Light by Deformed Ringed Spherulites
R. S. Stein and J. J. Van Aartsen
Journal of Polymer Science Part B, 5, 901 (1967).

109. The Scattering of Light by Solid Polymer Films having Partially Ordered Structure
R. S. Stein, P. Erhardt, S. Clough, J. J. van Aartsen and M. Rhodes
In book ELECTROMAGNETIC SCATTERING, R. S. Stein and R. L. Rowell, Eds., Gordon and Breach, New York, 1967, pp. 339-412.

110. ELECTROMAGNETIC SCATTERING
R. S. Stein and R. L. Rowell, Editors
Gordon and Breach, New York, 1967, 842 pages.

111. Internal Field and the Additivity of Bond Polarizabilities
R. S. Stein and R. L. Rowell
Journal of Chemical Physics 47, 2985 (1967).

112. Physical Studies of Rates of Deformation of Crystalline Polymers
R. S. Stein
Journal of Polymer Science Part C, 20, 185 (1967).

113. Scattering of Light by Ringed Spherulites Containing Biaxial Crystals
R. S. Stein and S. Clough
Journal of Applied Physics 38, 4446 (1967).

114. Rheo-Optics of High Speed Deformation
R. S. Stein and P. F. Erhardt
Applied Polymer Symposia, High Speed Testing Volume VI: THE RHEOLOGY OF SOLIDS 5, 113 (1967).

115. Time-Temperature Superposition of the Dynamic Birefringence of Polyethylene
R. S. Stein and A. Takeuchi
Journal of Polymer Science Part A-2, 5, 1079 (1967).

116. Optical Studies of the Stress Induced Crystallization of Rubber
R. S. Stein and W. Yau
Journal of Polymer Science, Part A-2, 6, 1 (1968).

117. Some Studies of the Crystallization of Polychlorotrifluoroethylene Copolymer Films
R. S. Stein and G. C. Adams
Journal of Polymer Science Part A-2, 6, 31 (1968).

118. Polarized Infrared Studies of Amorphous Orientation in Polyethylene and Some Ethylene Copolymers
R. S. Stein and B. E. Read
Macromolecules 1, 116 (1968).

119. Dynamic X-Ray Diffraction from Polyethylene
R. S. Stein, T. Kawaguchi, T. Ito, H. Kawai and D. Keedy
Macromolecules 1, 126 (1968).

120. Multiple-Order Light Scattering from Ringed Spherulites
R. S. Stein and S. B. Clough
Journal of Polymer Science Part A-2, 6, 783 (1968).

121. Properties of Ethylene-Methacrylic Acid Copolymers and Their Sodium Salts: Infrared Studies
W. J. MacKnight, L. W. McKenna and R. S. Stein
Journal of Physical Chemistry 72, 1122 (1968).

Funded Research Grants

		Agency	Year of Grant	Total Funds
1.	Research on the Structure of Synthetic High Polymers	Office of Naval Research	Sixteenth	$25,000 per year
2.	The Relationship between Crystal Morphology and Mechanical Properties	Petroleum Research Fund American Chemical Society	Third	$ 8,000 per year
3.	Dynamic Dichroism of Polymer Solids	National Science Foundation	Third	$49,400
4.	Mechanical and Optical Properties of Rubber	General Tire and Rubber Company	Fourth	$ 6,500 per year
5.	Grant-in-Aid	Monsanto Company	Third	$ 6,000 per year

Professional Activities

Memberships:

Advisory Board, Journal of Polymer Science
American Physical Society
American Chemical Society
Rheology Society
American Association for the Advancement of Science

Meetings Attended and Contributed Papers

1. Gordon Research Conference, New London, New Hampshire, July 3-7, 1967 (Discussion Leader).
2. Society of Rheology, Washington, D.C., October 23-24, 1967 (Presented Paper and Chairman of a Special Study Session)
3. Society of Plastics Engineers, Hoboken, New Jersey, November 7, 1967 (Invited Paper).
4. Eastern Analytical Symposium, New York, New York, November 8-9, 1967 (Invited Paper).
5. International Symposium on Polymer Characterization at Battelle Memorial Institute, Columbus, Ohio, December 1, 1967 (Invited Paper and Session Chairman).
6. Monsanto Company, Springfield, Massachusetts, December 12, 1967 (Invited Seminar).
7. American Physical Society, Berkeley, California, March 16-22, 1968 (Two Papers).
8. Chemistry Society of Rhode Island, Kingston, Rhode Island, April 30, 1968 (Invited Seminar).
9. General Tire Research and Development Center, Akron, Ohio, May 2, 1968 (Invited Seminar).
10. 3-M Company, Minneapolis, Minnesota, May 16, 1968 (Invited Seminar).
11. Xerox Corporation, Webster, New York, May 28, 1968 (Invited Seminar).
12. Monsanto Company, Texas City, Texas, June 4, 1968 (Invited Seminar).
13. Allied Chemical Company, Morristown, New Jersey, June 13, 1968 (Invited Seminar).
14. National Colloid Symposium, Chicago, Illinois, June 19-21, 1968 (Invited Paper and Session Chairman).

Lectures at Other Institutions

1. Chemistry Department, University of Kansas, Lawrence, Kansas, October 14, 1967 (Invited Seminar).
2. Chemistry Department, Dartmouth College, Hanover, New Hampshire, February 23, 1968 (Invited Seminar).
3. Franklin and Marshall Science Conference, Franklin and Marshall College, Lancaster, Pennsylvania, March 12-13, 1968 (Invited Seminar).
4. Chemistry Department, Polytechnic Institute of Brooklyn, Brooklyn, New York, April 22, 1968 (Invited Seminar).
5. Chemistry Department, University of New Hampshire, Durham, New Hampshire, May 14, 1968 (Invited Seminar).

Extension Teaching

A course of 11 lecture hours on Physical Chemistry of High Polymers was given to the E. I. duPont deNemours Company, Marshall Research Laboratory, at Philadelphia, Pennsylvania.

3. Accomplishments of the PSE Program During the Fiscal Year 1967-1968.

a. The University granted the first degrees in Polymer Science and Engineering. One master's degree with thesis and two master's degrees without thesis have been awarded within the first two years of the Program. Minor changes have been made in the requirements for degrees in PSE.

b. Contributed committee work to the new and now completed undergraduate Materials Science Curriculum which has been developed within the School of Engineering.

c. At present all space being used by PSE is under the jurisdiction of other departments. Plans for increasing the available space have been pursued.

   1. Space for four offices in Draper Annex has been arranged with the help of the Graduate School. Necessary remodeling is scheduled for August, 1968.

   2. Facilities requirements for six new research laboratories for PSE have been prepared. These requirements have been encorporated in the preliminary plans for the next major building for Engineering.

   3. A contribution has been made to the scientific meeting and to the proposal for a new engineering building for interdisciplinary studies on fluids.

   4. The best and most logical development plan for PSE is extension from Floors 7 and 8 in Tower A of the Graduate Research Center into the same floors of subsequently completed Towers B and C.

d. A new laboratory course is being developed in Polymer Characterization. This course will be a three credit course in PSE. It was formerly a one credit non-lab course in Chemistry. The course development has been aided by an NSF grant of $30,000 for "Development of a Graduate Laboratory Curriculum in Polymer Science." Polymer Characterization, PSE 790, will be offered for the first time in the fall of 1968.

e. A new proposal for project Themis has been prepared. The proposed research centers around the interdisciplinary programs in PSE. In addition, two PSE faculty members, Dr. MacKnight and Dr. Lenz, are currently doing research under the present University Themis grant.

f. Faculty and graduate students have been actively recruited. Two staff members, Dr. Karasz and Dr. Carmichael, have been added in the year. A total of over 17 candidates were carefully screened for these positions. Student enrollment in PSE has increased more rapidly than expected. Twenty-three students took our last Ph.D. cumulative examination. Only highly qualified students have been accepted. Of those approved by PSE for enrollment, about 80% are now on campus. This percent acceptance is twice the average of Chemistry, Engineering, and the University as a whole.

g. The PSE Program has continued to actively pursue funds for development of graduate student programs. PSE has been approved, with high ratings, for NDEA Title IV Fellowships and Traineeships. Two PSE students are now receiving such support. One NSF Traineeship has also been awarded. Several additional fellowships and grants have been received by PSE:

National Science Foundation, 7/1/67 - 6/30/70 - "Development of a Graduate Laboratory Curriculum in Polymer Science"	$30,000 Total
Stauffer Chemical Company Fellowship	$ 4,000/year
Owens-Illinois Fellowship	$ 2,400/year
American Chemical Society - Division of Rubber Chemistry	$ 1,000/year

4. Special Projects and Programs

a. A complete description of the PSE Program has been written-up and prepared in brochure form. A copy of the brochure is attached. Over 500 copies have already been distributed.

b. The PSE faculty has completed plans for participation in the intensive short course, Introduction to Polymer Science, to be offered in July, 1968, at the Center for Professional Development, Hopatcong, New Jersey.

c. In co-sponsorship with Chemistry, Dr. R. S. Stein has been placed in nomination for two different awards of the American Chemical Society. The PSE faculty has also nominated him for awards of the Society of Rheology and the American Physical Society.

d. A laboratory tour and general lecture were provided on April 3, 1968, for the Western New England Society of Plastics Engineers.

e. Arrangements have been made for the University to host a course on Polyolefins: Theory and Practice, August 19-23, 1968. This course is sponsored and organized by the Plastics Institute of America, a non-profit organization.

f. PSE faculty and students participated in a technical program and meeting of the Advisory Committee of the Polymer Research Institute at U. Mass., March 15, 1968.

g. The University is hosting the Biennial Polymer Symposium of the American Chemical Society on June 26-29, 1968; about 300 scientists from throughout the world are expected.

h. PSE contributed strongly to the success of obtaining a professionally trained librarian for the Goessmann Library.

5. Future Plans and Needs

Machine shop, photographic and drafting services are important needs which the University cannot ignore. For PSE, space is a crucial and serious limitation on development. We wish to realize in the next year the potential that is yet available to us. The record indicates that we can continue to add quality faculty and students. Substantial funding is also available. The PSE faculty averages about three major research grants per man, possibly a high for the campus. It is space which is the limitation. In an earlier section we discussed space planning with the most desirable goal being utilization of Floors 7 and 8 in the three towers of the Graduate Research Center.

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